RESOURCE MANAGEMENT PLAN

FOR

LAND BASED ACTIVITIES

IN THE

Prince Rupert Forest Region

2001 - 2005

A cooperative project developed by staff within the Ministry of Environment Lands and Parks, Skeena Region and district and regional staff within the Ministry of Forests, Prince Rupert Forest Region

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1.0 RMP: OVERALL SUMMARY

1.1 "Strategy at a Glance"

1.1.1 Overview

The Resource Management Plan (RMP) addresses land-based activities from the perspective of biological needs and forest resource management priorities. The plan forms a compendium of priorities determined by the Ministry of Forests (MoF), the Ministry of Environment, Lands and Parks (MELP), major licensees, woodlot licensees and other stakeholders. The RMP is designed to provide guidance to Forest Renewal BC (FRBC) and other agencies to determine the best activities for investments, regardless of the funding source or the agency actually completing the work.

1.1.2 General Strategy

The Resource Management Plan for the Prince Rupert Forest Region (PRFR) examines land-based resource needs and priorities in terms of:

- Commitments, recommendations and links to other land and resource management plans.
- The long-term resource implications of current investments.
- The value, risks and benefits of the various activities and treatments.
- The necessary timelines to meet defined resource management objectives.
- Delivery recommendations, viable options and consequences of not carrying out the activity.
- Consistency within programs and between delivery centres.
- Providing resource investment recommendations consistent with FRBC investment principles and ground rules.

1.1.3 Sustainable Harvest - SH

The objectives of the SH program include:

- increasing the volume, economic value and health of second-growth forests;
- maintaining or enhancing habitat supply and long-term biodiversity of second-growth forests;
- increasing the amount of land available for commercial timber production; and
- supporting more-informed silviculture investment decisions.

Sustainable Harvest strategies are associated with several key program initiatives. Enhanced Forestry includes stand tending, forest health enhancements, biodiversity maintenance, and habitat enhancements. Backlog Reforestation consists of surveys; site preparation; planting, brushing and density spacing. Forest Health Maintenance/Current Reforestation activities are associated with areas that require a free growing stand to be established that was damaged by fire and pests and has no tenure established.

The Management Units involved in the Sustainable Harvest component of the RMP are the Forest Districts of the PRFR. These are the Lakes, Morice, Bulkley-Cassiar, Kispiox, Kalum and North Coast Forest Districts. The Lakes and Morice Forest District each have one Timber Supply Area (TSA). The Bulkley-Cassiar and Kispiox Forest Districts each contain two TSAs. The Kalum and North Coast Forest Districts each contain one TSA as well as Tree Farm Licences (TFL). TFL 1 and TFL 41 are in the Kalum Forest District and part of TFL 25 is in the North Coast Forest District.

1.1.4 Strengthening Sustainable Forest Management - SSFM

The objective of this component of the RMP is to identify the opportunities for investment that support existing or proposed resource planning initiatives that are consistent with the Canadian Council of Forest Minister's definition of sustainable forest management. The RMP makes recommendations to invest in those projects that will help mitigate the greatest risks to the resources, the people and communities as determined at the local and regional level. The RMP for SSFM applies to all timber supply areas and TFLs within the boundaries of the Prince Rupert Forest Region.

The Ministries of Forests and Environment and industry stakeholders, with the support of Forest Renewal B.C, established working groups throughout the Prince Rupert Forest region. From mid-May through to mid-September 2000, the Regional Planning Team (RPT) and each of the District Planning Teams (DPT's) collaborated to determine the priority issues and knowledge gaps in each area. Each planning team then proposed strategies and projects to work towards better support existing strategic land use planning, timber supply, operational planning and resource management practices and processes.

The following table outlines the 11 priority issues out of the 41 regionally identified issues. Also included are the district issues that line up with these priority issues. The table clearly shows that districts (including licensees) and the region have largely the same areas of concern. There are some district issues that are high priority that do not line up with the top 11, but need to be addressed to meet the stated objective above. The table also shows issues that are the highest priority for the district (underlined) and/or have projects in place (bold font).

Issue as identified by the Strategic Team and Regional Planning Team

	Lakes	Morice	Bulkley	Kispiox	Kalum	North Coast	Cassiar
1.21 How do we ensure the LU's retain appropriate attributes represented in riparian, OGMA's, FEN's, sensitive areas	**La5**, La27, La21, La28	Mo1, **Mo2**, **Mo3**, **Mo5**, Mo6, Mo8, Mo14, M016	**Bu3**,**Bu7**, **Bu2**	Ki2, Ki4, **Ki6**, Ki10	Ka8, Ka12, **Ka19**	NC2, NC8, NC12, NC18, NC19, NC23	Ca11
1.22 What timber opportunities are available around managing critical or sensitive habitat?	La19, La27	Mo5,	**Bu3**,	–	–	–	Ca10
1.23 How can we best manage harvesting and crossing S4-S6 streams to protect & conserve habitat?	La2, La16, La30, La31	**Mo7**, **Mo12**, Mo17	**Bu4**, Bu5	**Ki5**	**Ka22**	NC4, NC12, **NC16**	–

Issue as identified by the Strategic Team and Regional Planning Team

	Lakes	Morice	Bulkley	Kispiox	Kalum	North Coast	Cassiar
1.33 How can we access existing information and technology transfer to share information resources as broadly as possible at reasonable cost?	La16	Mo9, Mo18, Mo22	–	–	Ka1, Ka24	–	–
2.11 What is the productivity of managed stands in the different ecosystems of the PRFR?	La5, La7	Mo9, **Mo20**	Bu6	Ki12, Ki15	Ka2, Ka6	NC2, **NC3**, NC10, NC18	**Ca1**, **Ca2**
2.12 How productive are managed stands using partial cutting silvicultural systems in the different ecosystems of the PRFR?	La5, La7	Mo9	Bu6, Bu11, **Bu12**, Bu15	–	Ka2, Ka16	**NC3**	–
2.21 How can we conserve viable populations of Identified Wildlife Species, and rare and endangered species (red and blue listed), that inhabit the forested land base?	**La9**, **La10**, **La11**, **La12**	Mo1, **Mo2**, **Mo3**, Mo4, **Mo5**, Mo6, **Mo7**, **Mo8**, Mo10, Mo11, Mo16	Bu2, **Bu14**,Bu15 , Bu17	Ki6, Ki10	Ka8, Ka15, Ka17	NC7, NC8, NC13, NC20, NC21, NC23, NC24, NC25	Ca5, Ca6, Ca7
3.11 How do we manage harvesting around and crossing streams to adequately protect and conserve water quality and quantity?	**La13**, La14, La25	**Mo12**, **Mo17**, Mo21	**Bu11**,	**Ki3**	–	NC4, **NC16**	–
3.12 What are the best management practices for operations on steep slopes with respect to conserving water quality and quantity, slope stability and productive land base?	–	Mo21	**Bu8**,**Bu11**	**Ki3**	–	NC26	–
3.13 What are the best management practices around unclassified streams based on existing stream inventory information?	La30, La31	**Mo7**	**Bu4**	–	–	–	–
5.11 How do we increase the participation of First Nations in the local forest sector economy?	**La6**	–	**Bu13**			NC27, NC29	

District Planning Teams all identified that there is a continued emphasis on developing complete and integral inventories. These inventories form the basis on which many other projects are founded and critical land use decisions are made. They cannot be ignored.

1.32 For what forest resources are we lacking a complete and integral inventory to meet TSR requirements?	La2, La9, La10, La11	**Mo7**, Mo10, Mo14, **Mo15**, Mo19	**Bu3**,**Bu8**, **Bu9**, Bu16	Ki1, Ki4, Ki7, Ki10	Ka3, Ka4, Ka5, **Ka19**, **Ka20**, Ka21, Ka24	**NC1**, NC2, NC10, NC12, NC22	**Ca1**, **Ca2**, Ca8, Ca9

Part 8.41 of the RMP has project summary tables that include district and regional projects that address the issues.

1.1.5 Enhancing Environmental Values - EEV

The Watershed Restoration Program (WRP) was introduced in 1994 as a part of the newly formed Crown Corporation, Forest Renewal British Columbia. The purpose of the WRP was:

- to restore, maintain and protect fisheries, aquatic and forest resources that have been adversely affected by past forest harvesting practices.

- to provide community based training, employment, and stewardship opportunities; and
- to provide a mechanism to bridge historical forest harvesting practices and the (then) new standards established by the Forest Practices Code.

As part of the strategic planning exercise undertaken by FRBC in 1999, the focus of the WRP was further refined. ***The program will focus on restoring and protecting fish habitat and domestic water supply in priority watersheds.*** FRBC will continue to fund activities, be them upslope, in-stream or riparian, that are required to restore and protect fish habitat and domestic water supply.

A wide variety of hydrological and terrain conditions are present across the Prince Rupert Forest Region. The North Coast contains steep rocky terrain where runoff is dominated by rainfall events. Rain-on-snow events provide the largest run-off events in the deep seated tills on moderate to steep slopes in the Kalum and Kispiox districts. Moving east to the Bulkley, Morice and Lakes districts, one finds rolling interior plateau topography with highly erodable soils and snowmelt provides the dominate runoff events.

The aquatic resources of the region are rich and diverse. Major watershed in the Skeena-Bulkley Region include the Skeena River watershed and the Nass River watershed, the second and third largest watersheds in the province, respectively. The watersheds in the region support five species of Pacific salmon (chinook, sockeye, chum, coho and pink) as well as anadromous populations of rainbow trout (steelhead), cutthroat trout and eulachon. Resident populations of rainbow trout, cuthroat trout, bull trout, Dolly Varden and kokanee also abound throughout the region. In addition, many populations of many other non salmonid species round out an extremely diverse and unique fisheries resource.

1.1.6 Ministry Components

The Ministry components of this RMP include:

- Current Reforestation (CR)
- Forest Health Maintenance (FHM)
- Non-Status Road Rehabilitation & Deactivation (NSRRD)
- Forest Service Road Management (FSRM)
- Forest Resources Inventory (FRI)
- Recreation Site and Trail Maintenance (RSTM)
- Research

These components relate to the following Management units within the Prince Rupert Forest Region:

- Lakes Timber Supply Area(TSA) within the Lakes Forest District
- Morice TSA within the Morice Forest District
- Bulkley and Cassiar TSA within the Bulkley Cassiar Forest District
- Kispiox TSA within the Kispiox Forest District
- Kalum TSA and Nass TSA within the Kalum Forest District

- North Coast TSA within the North Coast Forest District.

They do not deal with activities on the three Tree Farm Licences (1, 25 or 41) or Nisga'a treaty lands

The objectives for the Ministry Components (parts 3,4,6,7,9,10 and 11) of the RMP are stated in the first section within each part. Activities are listed in the district tables in each part and the regional roll ups for the Ministry Components are included in section 1.4.

1.2 Introduction

This RMP examines, within the Prince Rupert Forest Region, 'investment needs' of the forested land base while considering longer-term implications. The guidelines and ground rules used to develop the RMP plan are highlighted in Appendix A. These were determined jointly by MoF, MELP and FRBC. The ground rules are used as a benchmark against which the plans are evaluated, and include geographic units, process co-ordination, process participants, plan process and content, and conflict resolution.

This plan addresses FRBC land-based programs but also includes other ministry programs. All are listed below:

- Sustainable Harvest (SH)
- Current Reforestation (CR)
- Forest Health Maintenance (FHM)
- Enhancing Environmental Values (EEV)
- Non-Status Road Rehabilitation & Deactivation (NSRRD)
- Forest Service Road Management (FSRM)
- Strengthening Sustainable Forest Management (SSFM)
- Forest Resources Inventory (FRI)
- Recreation Site and Trail Maintenance (RSTM)
- Research

For each of the above programs, this RMP provides the strategic objective for managing the resources under each program along with the strategies and opportunities necessary to meet that objective. Investment priorities and opportunities have been identified along with the 'critical' and optimal levels of delivery for each activity.

A significant portion of the funding for these investments is provided through the Skeena/Bulkley Region of FRBC under their land-based programs. Although MoF and MELP have the mandate for administering the land base, much of the resource investments may be delivered by stakeholders other than these government ministries. The ministries therefore provide FRBC and the other stakeholders guidance as to which activities are sound resource investments for achieving the resource management objectives. This often includes considering timing, quantity and location of the work as well as the type of work that needs to be delivered. Details describing stakeholder involvement into the RMP process are listed by Forest District and program in Appendix B.

This RMP is divided into 10 component parts according to the FRBC and agency programs listed above. In section 1.4, data from each of these components are summarized from a regional perspective then described in greater detail in the body of the RMP.

1.3 Overview of Resource Management Issues

The Prince Rupert/Skeena Regions are fortunate in the supply and diversity of their forest resources. However, there are a number of issues that face resource management agencies that have no short term solution. Many of the issues are dealt with in depth in the component parts of this RMP. The following issues are of regional significance:

- One of the major issues faced by companies and the Small Business program is the high delivered wood cost. Projects such as Cost Drivers Initiative, have been successful at both bringing licensees and agencies together to mutually agreeable solutions and have resulted in some cost savings. The amendments to streamline the Forest Practices Code in 1998 (reduction in the number of plans from six to three, adjustment of green-up requirements, etc.) have all helped industry improve their competitive edge but more effort is still required to bring costs down.
- The lack of treaties with first nations has caused a great deal of uncertainty for people and licensees doing business in the area. Although one treaty, the Nisga'a Treaty, is the first completed modern day treaty of its kind, there are still many first nations groups in the province at various steps in the treaty process. Recent court rulings on the requirements for rights and title have sometimes slowed award of licenses and plan approvals.
- Included with the lack of treaties is the desire of first nations to have a more active voice in the economic activities on the land. This is very often hampered by the capacity to participate in various initiatives and is exacerbated by many initiatives happening simultaneously (i.e. treaty negotiations, interim measures, economic activity).
- Sustainability and a concern for the environment are also a top priority. At the moment, coastal logging companies are negotiating agreements with environmental groups over how logging should take place on their areas of interest. This project, the Coastal Forest Conservation Initiative, is taking place at a very high level and is now trying to involve the respective first nations groups.
- Landscape unit plans for the Region, while not yet complete, remain a high priority for both agencies. This is applicable to all districts whether they have higher level plans in place or not. The certainty they provide to both statutory decision makers and the licensees provides a very efficient mechanism for operational plan approvals.
- The continuing increase of mountain pine beetle infestations in the eastern districts is causing both agencies and licensees to concentrate most of their efforts in trying to control this epidemic. In addition, incidences of spruce bark beetle are on the rise. The impacts to harvesting programs to address these issues is significant with amendments to forest development plans and new silvicultural prescriptions being developed to address the recently attacked areas.

1.4 *Regional Summaries of the RMP Component Data*

1.4.1 Sustainable Harvest Component

1.4.1.1 Regional Rollup Enhanced Forestry Table

Activities	**Treatment Area Goals (ha)**					**Plan 2001/02**	
Stand Tending	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	6380	33080	7740	8470	8500	47.16	300865
Spacing	3476	3755	3840	3665	3865	1033.54	3592580
Pruning	1215	1336	1431	1431	1431	1281.79	1557380
Fertilizing	4300	1950	1950	2000	3500	300.00	1290000
Other	802	800	800	800	800	2.00	1600
Totals hectares	16173	40921	15761	16366	18096	416.89	6,742,425
Planning and prescriptions							313500
Total dollars							7,055,925
Forest Health Enhancement							
Spacing	100	100	100	100	100	699.95	70000
Pruning	0	0	0	0	0	0.00	0
Other treatments	1900	1900	1900	1900	1900	425.00	807500
Totals hectares	2000	2000	2000	2000	2000	438.75	877,500
Habitat Supply and Biodiversity Enhancement							
Treatments	100	100	100	100	100	199.99	20000
Domestic Range							
Treatments	0	0	0	0	0	0.00	0
Enhanced Forestry Activities - Management Unit Total							
Surveys	6380	33080	7740	8470	8500	47.16	300,865
Spacing	3576	3855	3940	3765	3965	1,024.21	3,662,580
Pruning	1215	1336	1431	1431	1431	1,281.78	1,557,380
Fertilizing	4300	1,950	1,950	2,000	3,500	300.00	1,290,000
Other stand tending activities	2802	2800	2800	2800	2800	295.89	829100
Totals hectares	18273	43021	17861	18466	20196	418.10	7,639,925
Planning and prescriptions							313,500
Studies funding							271,840
Total dollars							8,225,265

1.4.1.2 Regional Rollup Backlog Program Table

Activities	**Treatment Area Goals (ha)**					**Plan 2001/02**	
Legal Obligations	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	100	100	100	100	0	46.00	4600
Site preparation	0	0	0	0	0	0.00	0
Planting	25	25	0	0	0	1,079.70	27000
Brushing	220	220	220	220	220	704.53	155000
Max. density spacing	0	0	0	0	0	0.00	0
Totals hectares	345	345	320	320	220	540.81	186,600
Seed purchase	27000	27000	0	0	0	0.37	10000
Total legal obligations							196,600
Backlog Reforestation							
Surveys	15964	12150	8700	8123	8000	36.75	586650
Site preparation	170	150	150	150	150	970.56	165000
Planting	515	635	395	390	375	897.08	462000
Brushing	647	840	735	900	750	775.70	501880
Totals hectares	17296	13775	9980	9563	9275	99.19	1,715,530
Seed purchase	600	200000	0	0	0	240.66	144400
Prescriptions and planning dollars							76540
Total backlog reforestation							1,936,470
Impeded areas							
Surveys	18475	17650	17150	16500	16500	29.22	539750
Brushing	3386	3170	3040	2880	2880	662.29	2242500
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	21861	20820	20190	19380	19380	127.27	2,782,250
Prescriptions and planning dollars							171250
Total impeded areas							2,953,500
Site Restoration							
Fill planting	400	400	400	400	400	30.00	12000
Rehabilitation	32	300	300	300	300	1,399.69	44800
Reforestation	32	100	300	300	300	483.89	15488
Totals hectares	464	800	1000	1000	1000	155.79	72,288
Seed purchase	32000	100000	100000	100000	100000	0.25	8000
Prescriptions and planning dollars							30000
Total site restoration							110,288
Backlog Program Activities - Management Unit Total							
Surveys	34539	29900	25950	24723	24500	32.75	1131000
Site preparation	202	450	450	450	450	1,038.51	209800
Planting	972	1160	1095	1090	1075	531.35	516488
Brushing	4253	4230	3995	4000	3850	681.72	2899380
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	39966	35740	31490	30263	29875	119.02	4756668
Seed purchase	59600	327000	100000	100000	100000	2.72	162400
Prescriptions and planning							277,790
Recommended studies							0
Total backlog program							5,196,858

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

1.4.1.3 Regional Rollup Performance Measures

	Performance Measure	Tree Improvement	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A	**Planned treatment area (ha) in 2001/2002**	972	300	13,503	202	972	4,253	3,576	1,215	4,300	32,095	
1.0	**Timber Supply**											
1.1	Potential volume/ha gain (m3/ha/yr)	0.34	0	0.25	0	1.9	0.25	0	0	0.40		
1.2	Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3	Pot. tot. merch. vol. increment in 65 yrs (m3)	21,482	0	219,428	0	120,045	69,111	0	0	111,800		**541,866**
1.4	Est. yrs reduced to achieve mngt objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4	Est. area that will be reclass. as stocked (ha)			3,150								**3,150**
1.5	Est. area declared as free growing (ha)			11,750								**11,750**
2.0	**Wood Value**											
2.1	Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0	**Employment**											
3.1	Estimated short term employment (person days/ha)	0.1	0.34	0.1	0.95	2	2.61	3.96	4.54	0.18	0.1	
3.2	Estimated total employment (person days/year)	97	102	1,350	192	1,944	11,100	14,161	5,516	774	3,210	
3.3	Estimated total full time equivalent positions (FTE)	1	1	8	1	11	62	79	31	4	18	**214**
4.1	**Forest Health Enhancement (ha)**											**2,000**
5.1	**Habitat Supply**											
5.2	Planned area for specific wildlife forage or habitat creation in 2001/2002 (ha)											**100**
5.3	Est. area with secondary value provided to biodiversity (ha)											**2,300**

1.4.1.4 Regional List of Proposed Studies

Rank	Project Name	FRBC's Cost 2001/2002
BULKLEY		
1.	Cost benefit analysis of chemical vs. natural fertilizers	$20,000
2.	Literature review of Wildlife Habitat Supply Analysis and Modelling	$20,000
3.	Review information required by the Chief Forester to change OAF value in the Timber Supply Analysis	$20,000
4.	Review non-merchantable timber types in the IRM to determine how these can contribute to the future TSA timber supply	$20,000
	TOTAL	**$80,000**
MORICE		
1.	Quantify, assess, rehabilitate non-productive roads and landings	$51,840
KALUM		
1.	Long term vegetation study	$45,000
2.	Vole repellant study	$20,000
3.	Fertilization trial	$10,000
	TOTAL	**$75,000**
NORTH COAST DISTRICT		
1 .	Fertilization screening trails to determine whether there will be a benefit to stand growth from fertilization. If stand growth is improved then a follow up cost benefit analysis will be performed. It is anticipated that this project will be combined with the Interfor project .	$60,000
2	Fertilization screening trails to determine whether there will be a benefit to stand growth from fertilization. If stand growth is improved then a follow up cost benefit analysis will be performed. It is anticipated that this project will be combined with the WFP project	$25,000
	TOTAL	**$85,000**
	REGIONAL TOTAL	**$291,840**

1.4.1.5 Regional Rollup Summary Table

Woodlot information is not included in this section.

	Treatment Area Goals (ha)					Plan 2001/02	
	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	18,273	43,021	17,861	18,466	20,196	418	7,639,925
Planning, prescriptions and seedlings							585,340
Backlog Program Field Activities	39,966	35,740	31,490	30,263	29,875	119	4,756,668
Planning, prescriptions and seedlings							440,190
Totals	58,239	78,761	49,351	48,729	50,071		13,422,123

Performance Measures

Potential total merchentable volume increment in 65 years	541,866 m^3
Estimated ha that will be reclassified as stocked	3,150 ha
Estimated ha that will be declared as free growing	11,750 ha
Estimated total full time equivalent positions generated	214 FTEs
Forest health enhancement area	2,000 ha
Planned area for specific wildlife forage or habitat creation	100 ha
Estimated area with secondary value provided to biodiversity	2,300 ha

1.4.1.6 Regional Rollup of Woodlot Program

Estimates for the Woodlot Program were calculated in a variety of ways, ranging from using recent survey results, to reviewing past needs assessments or estimating the average number of hectares each woodlot can treat. The four woodlot associations in the Prince Rupert Forest Region would benefit from a long range plan where the needs of each of the 99 woodlots in these four associations are assessed.

	Treatment Area Goals (ha)					Plan 2001/02	
	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	210					857	180,000
Planning, prescriptions and seedlings							7,500
Backlog Program Field Activities	1,314					391	513,968
Planning, prescriptions and seedlings							60,260
Totals	1,524						761,728

1.4.2 Current Reforestation

To date, the North Coast Forest District is the only district in the Prince Rupert Forest Region needing funding for current reforestation.

Activities	Five-year Plan Goals (ha)					Annual Plan 2001/02		
	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($)	Funding ($000)	Priority C, H, M, L
1 Planning/surveys/prescriptions	130	0	13	0	0	$80	$10,432	H
2 Site preparation	0	0	0	0	0	0	0	
3 Planting	0	0	0	0	0	0	0	
4 Brushing	13	0	0	0	0	1,465	19,050	H
5 Max. density spacing	0	0	0	0	0	0	0	
6 Studies	0	0	0	0	0	0	0	
7 Other	0	0	0	0	0	0	0	
Totals hectares	143	0	13	0	0	206	29,482	
Seedling purchase	0	0	0	0	0	0	0	
Total funding							29,482	

Priority is critical, high, moderate, low

1.4.3 Forest Health Maintenance

1.4.3.1 Regional Rollup of Forest Health Maintenance Activities

Protection of Current Inventory Sub-Program:

		Five-year Plan Goals					Annual Plan 2001/02		
Activities	**Units**	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($)	Funding ($)	Priority C, H, M, L
1 Ground Surveys	ha	12293	12280	12280	12280	12280	$54	669500	
2 Defoliator spraying	ha	0	0	0	0	0	$0	0	
3 Aerial Survey - overview	ha	929000	929000	929000	929000	929000			
4 Aerial Surveys - detailed	ha	722000	722000	722000	722000	722000			
Totals hectares		1313143	1313130	1313130	1313130	1313130			
5 Aerial Survey - overview	hrs fly time	140	140	140	140	140	$507	71000	
6 Aerial Surveys - detailed	hrs fly time	7797	7797	7797	7797	7797	$36	284000	
7 Fall and burn treatment	trees	42800	22700	22600	22500	22400	$79	3394000	
8 MSMA treatment	trees	48000	48000	48000	48000	48000	$22	1072000	
9 Pheromone baiting	trees	4760	4760	4760	4760	4760	$38	182000	
10 Studies	number	3	2	0	0	0		175000	
11 Other		200	200	200	200	200		47500	
Totals							$738	$5,895,000	

Note: while it is efficient for the Morice district to administer this work on behalf of Parks there is a significant concern regarding the ability of the district to resource these activities (staff time to monitor etc)

Forest Health Information Sub-program:

		Five-year Plan Goals					Annual Plan 2001/02		
Activities	**Units**	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($)	Funding ($)	Priority C, H, M, L
1 Ground Survey	ha	2500	2500	1000	1000	1000	$20	50000	
Totals hectares		2500	2500	1000	1000	1000			
2 Airl Sur.-overview*	hrs fly time	80	80	80	80	80	$500	40000	
Studies/Op. Trials:		4	1	1	1	1	$14,963	60000	
3 Hazard and risk	number	1	1	1	1	1	$14,778	15000	
4 Impact anal. G&Y	number	4	2	2	2	2	$9,116	36500	
5 Treatments	number	0	0	0	0	0	0	10000	
6 Training Courses	number	5	5	5	5	5	$1,077	5400	
7 Other		202	202	202	202	202	$134	27000	
Totals		296	291	291	291	291	$0	$243,900	

Priority is critical, high, moderate, low

1.4.1 Enhancing Environmental Values

1.4.3.2 Summary of Regional Priority Setting

Summary of Regional Priority Setting

Skeena Bulkley Region Landscape Unit Breakout

Region WU Breakdown	Number
All watershed units with some pre-Code forest harvesting	228
Number of watershed units which are important producers/conservers for targeted fish species/stocks or domestic water supply (**Key** watersheds)	270
Number of key watersheds (i.e. VH, H values for fish/water values)	270
Category I key watersheds	184
Category II key watersheds	18
Category IIB key watersheds	-
Category III key watersheds	45
Category IV key watersheds	2
Category V key watersheds	21
Number of **Priority Key** watersheds	194
Targeted watersheds	79

1.4.4 Non-Status Road Rehabilitation & Deactivation

1.4.4.1 Regional Rollup of Data Template identifying High/Moderate Priorities

Fiscal: 2001/2002 $ 305,000

District	Watershed Name	Project Name	Proponent	Activity	Units	Estimated Cost	Priority	Benefit to
DKM	Hotsprings	Scully	MOF	RD	1	$ 30,000	1	Infastructure
DKM	Humphrey	Humphreys group	MOF	RD	5	$ 45,000	1	Infastructure
DKM	Kalum Lower	Alice Creek	MOF	RD/HR	1	$ 65,000	2	Infastructure and private property
DKM	Skeena R. Kalum	Amsbury to Exstew	MOF	RD	5	$ 45,000	1	Infastructure, plantation, safety aesthetics and private property
DKM	Cecil	CPU roads	MOF	RD	50	$ 40,000	2	Plantation
DKM	Wedeene	Wedeene slide	MOF	HR	1	$ 70,000	1	Infastructure, safety and access
DBC	McKendrick	Inspection	MOF			$ 2,500	M	Environment
(Bulkley TSA)	McKendrick	Bridge Removal	MOF		1	$ 7,500	M	Public Safety

1.4.5 Forest Service Road Management Program

1.4.5.1 Regional Rollup of FSR Data Template

FOR YEAR 2001/2002 PRINCE RUPERT FOREST REGION

ACTIVITY	ACCT	PRIORITY	OUTPUT	OUTPUT		EST. COSTS			TOTAL	BUDGET	ACTUAL
			UNITS	GOALS	BASE $	CUMUL. BASE $	INCR. $	CUMUL. INCR. $	EST. $	ALLOC.	COSTS
Fixed Costs (region $):											
Management Planning	*40801*			0	27,000	27,000	0	0	27,000		
Right-of-way acquisition	*40802*	H	NO.	0	71,000	98,000	0	0	71,000		
emergency repairs	*40803*	H	NO.	0	25,000	123,000	0	0	25,000		
inspection of bridges/major culverts	*40804*	H	NO.	75	15,000	138,000	0	0	15,000		
railway crossing maint.	*40805*	H	NO.	0	4,300	142,300	0	0	4,300		
subtotal					142,300		0		142,300		
Surface Maintenance	*40805*	H	KM	363	722,000	864300	0	0	722,000		
(e.g., grading, brushing,		M	KM	63	0	864300	65,000	65000	65,000		
ditch cleanout, bridge		L	KM	0	0	864300	0	65000	0		
deck cleaning and repair)											
subtotal					722,000		65,000		787,000		
Modification-Bridge and	*40806*	H	NO.	12	1,195,000	2,059,300	0	65,000	1,195,000		
Major Culvert Replacement		M	NO.	4	0	2,059,300	175,000	240,000	175,000		
		L	NO.	0	0	2,059,300	0	240,000	0		
subtotal					1,195,000		175,000		1,370,000		
Modification-Other Works	*40807*	H	NO.	16	380,000	2,439,300	0	240,000	380000		
(e.g., road relocation, stream		M	NO.	7	0	2,439,300	70,000	310,000	70000		
culvert replacement, road		L	NO.	0	0	2,439,300	0	310,000	0		
stability repair)											
subtotal					380,000		70,000		450000		
Road Deactivation	*40808*	H	KM	0	115,000	2,554,300	0	310,000	115000		
		M	KM	18	0	2,554,300	15,000	325,000	15000		
		L	KM	16	0	2,554,300	32,000	357,000	32000		
subtotal					115,000		47,000		162000		
TOTAL						2,554,300		357,000	2,911,3000		

1.4.6 Strengthening Sustainable Forest Management Component

1.4.6.1 Regional Project Summary Table

The following Table summarizes potential projects of a Regional nature. These are a combination of ongoing and new projects. They are derived largely from the Regional Strategy documents outlined in Section 8.3. However, they do not include all potential projects identified by those Regional Strategies because many such projects would best be implemented and undertaken at the District level.

Issue #	Proj #	Project Name	Proj Status (E or N)	Type of Knowledge Investment (E, U or N)	Type of Benefit	Scope of Benefit (# MU, R, P)	Timing of Benefit (S or L)	Ability to use knowledge	Timing - when is completion req'd?	Prob. Of success (H,M,L)	Potential source of funding (RIP, RE, HIP, CLUPE)	Investment to date ($)	Investment to date (yrs)	$ req'd 2001-02	$ req'd 2002-03	$ req'd 2003-04	$ req'd 2004-05	$ Total (incl. Existing investment)	Total # Yrs to complete (incl. Yrs to date)
Re1.21	A	Workshop - Landscape modelling	N	E, U	E,T,NT	R	L	TSR, LRMP, LUP	2002	H	RIP	$0	0	$18,000	$0	$0	$0	$18,000	1
Re1.21	B	Workshop - successional pathways	N	E, U	E, T, NT	R	L	TSR, LRMP, LUP	2002	M	RIP	$0	0	$18,000	$0	$0	$0	$18,000	1
Re1.21	C	Workshop - NDT data models	N	E, U	E, T, NT	R	L	TSR, LRMP, LUP	2002	M	RIP	$0	0	$18,000	$0	$0	$0	$18,000	1
Re1.21	D	Workshop - Indicators of Biodiversity Conservation	N	E, U	E, T, NT	R	L	TSR, LRMP, LUP	2002	M	RIP	$0	0	$18,000	$0	$0	$0	$18,000	1
Re1.23	A	Riparian Mgmt - adaptive mgmt project	N	E, U, N	E, T, NT	R, P	L	TSR, LRMP, LUP	Indefinite	M	RE	$0	0	$80,000	$80,000	$80,000	?	$240,000	10+
Re1.23	B	Riparian use by semi-aquatic mammals	N	N	E, T, NT	R, P	L	TSR, LRMP, LUP	2004	H	RIP	$0	0	$12,000	$12,000	$12,000	$0	$36,000	3
Re1.24	A	Workshop on ungulate winter range	N	E, U	E, T, NT	R	S, L	TSR, LRMP, LUP	2002	H	RIP	$0	0	$8,000	$0	$0	$0	$8,000	1
Re1.33	A	Data sharing network	N	U, E	E, T, NT	R, P	S	TSR, LRMP, LUP	2003	H	RIP, IFPA	$0	0	$77,000	$188,000	$0	$0	$265,000	2
Re1.33	B	Inventory of inventories	N	U, E	E, T, NT	R	S	TSR, LRMP, LUP	2001	H	RIP	$0	0	$50,000	$0	$0	$0	$50,000	1
Re2.11	A	Permanent sample plot remeasures	E	N	T, NT	MU,R,P	L	TSR, LRMP, LUP,	2010	H	RIP	$125,000	2	$45,000	$162,000	$132,000	$100,000	$564,000	7
Re3.12	A	Long term streamflow and water quality data	E	E, N	E, T, NT	MU,R,P	L	TSR, LRMP, LUP,	2005	H	RIP	$1,530,000	5	$170,000	$170,000	$170,000	$170,000	$2,210,000	9
Re3.12	B	Landslide indicators	E	E,U,N	E, T, NT	MU,R,P	S,L	TSR, LRMP, LUP,	2003	H	RIP	$50,000	2	$25,000	$25,000	$25,000	$0	$125,000	4

Issue #	Proj #	Project Name	Proj Status (E or N)	Type of Knowledge Investment (E, U or N)	Type of Benefit	Scope of Benefit (# MU, R, P)	Timing of Benefit (S or L)	Ability to use knowledge	Timing - when is completion req'd?	Prob. Of success (H,M,L)	Potential source of funding (RIP, RE, HIP, CLUPE)	Investment to date ($)	Investment to date (yrs)	$ req'd 2001-02	$ req'd 2002-03	$ req'd 2003-04	$ req'd 2004-05	$ Total (incl. Existing investment)	Total # Yrs to complete (incl. Yrs to date)
Re3.12	C	SINMAP model	E	E,U	E, T, NT	MU,R,P	S,L	TSR, LRMP, LUP,	2003	H	RIP	$18,000	1	$30,000	$0	$0	$0	$48,000	2
Re3.12	D	Precipitation threshold	N	E,U ,N	E, T, NT	MU,R	S,L	TSR, LRMP, LUP,	2005	H	RIP	$0	0	$10,000	$50,000	$50,000	$50,000	$160,000	4
Re3.12	E	landslide guidebooks	N	E	E, T, NT	MU,R	S,L	TSR, LRMP, LUP,	2005	H	RIP	$0	0	$0	$25,000	$0	$0	$25,000	1
Re3.12	F	Fan research	E	N	E, T, NT	MU,R,P	L	TSR, LRMP, LUP,	2005	H	RE	?	?	?	?	?	?	?	?
Re3.13	A	FFHI, FDIS data reanalysis	N	E, U	E, T, NT	R	S, L	TSR, LRMP, LUP,	2002	H	RIP	$0	0	$20,000	$0	$0	$0	$20,000	1
Re3.13	B	FHAT 20 analysis	N	E, U	E, T, NT	R	S, L	TSR, LRMP, LUP,	2002	H	RIP	$0	0	$20,000	$0	$0	$0	$20,000	1
Re5.11	A	Traditional Use Studies	E	N	E, T, NT	MU,P	L	LRMP	2005	H	HIP	?	4	?	?	?	?	?	?

Notes

1 Regional Projects are itemized by Regional Issue Number as per the Matrix of CCFM Goals

2 E = existing, N = new

3 E = Organization, Analysis or Synthesis of **E**xisting Info; U = Tools or Extension to Enhance **U**se of existing Info; N = Field Inventory or Research

4 Reduction of risk to: E = Environmental values, T = timber resource values, NT = non-timber resource benefits. There can be more than one.

5 # MU = # Forest Districts (Management Units) affected; R = Regional effect; P = Provincial effect

6 S = short-term (< 5 yrs); L = Long term

7 Strategic decision process for implementation of plans: SLUP (e.g., Regional, LRMP), TSR

8 H = proven techniques; L = unproven techniques or methods

9 RIP = FRBC Regional Investment Plan; RE = Research; HIP = FRBC HQ Investment Plan; CLUPE = Crown Land Use Planning & Extension

1.4.7 Forest Resources Inventory

1.4.7.1 Regional assessment of inventory needs based on results of the Table 2 completed by each District

See section 9.0 for regional and district assessments of inventory needs.

1.4.8 Recreation Site & Trail Maintenance

1.4.8.1 Regional Rollup of Data Template submitted by Districts

Campgrounds: Number and Funding Needs by Category

	Sign and toilet only										Priority[(1)]
			Some Tables and Fire Rings								C H M L
					Full Complement of Facilities at each Campsite						
							Enhanced: Full Time Operator				
Activity	A		B		C		D		**Total**		
	#	$'s	#	$'s	#	$'s	#	$'s	#	$'s	
Maintenance	3	1000	10	14000	90	124800	2	29000	105	168,800	
Repair/Replace Structures	0	8000	9	5000	16	23860	0	2835	25	39,695	
Rehabilitation	0	0	2	4000	2	8000	0	0	4	12,000	
Development	0	800	2	1500	5	6000	0	0	7	8,300	
	0	0	0	0	0	0	0	0			
Total	3	9800	23	24500	113	162660	2	31835	141	228795	

Campsites and Trails Three Year Plan

Activity	**2001/02**	**2002/03**	**2003/04**
	$'s	$'s	$'s
Maintenance	226,300	230,200	239,085
Repair/Replace Structures	44,695	58,030	39,781
Rehabilitation	123,000	8,500	8,000
Development	79,400	118,500	13,500
	6,000	6,000	0
	479395	421230	300366

Trails: # and $'s

# or km		$'s	Priority[(1)] C H M L
Maint.	83	44500	
Repair	10	4000	
Rehab.	14	111000	
Develop	116	36100	
	223	195600	

[(1)] Priority is critical, high, moderate or low

Additional expenditures:		
	Develop Recreation objectives for SMZ's in higher level plans (Kispiox	**$10,000**
	Prepare Recreation Strategic Plan	**$15,000**
	Location and mapping of existing trails	**$10,000**
	Total	**$35,000**

1.4.9 Research

Research installations in the PRFR date back to the early 1960's, and the Forest Sciences Section has been active in research and extension since the mid 1970's. Most of the current staff have been in position for over 17 years, establishing strong working relationships with government and forest industry staff as well as First Nations, NGO's and the Public. Extension is a priority with the Forest Sciences staff, with considerable time allocated to operational problem solving and presenting training courses. Research direction has been provided by the Regional Research Advisory Committee for over two decades. Due to reductions in staffing levels and current research/extension commitments, there is limited capability to address new issues. This is a serious situation if the MoF is to achieve sustainable forest management goals.

1.5 PROCESS APPENDICES

A. GUIDELINES FOR THE DEVELOPMENT OF RESOURCE MANAGEMENT PLANS - SKEENA BULKLEY REGION - 2001/2002 PLANNING YEAR.

In order to assure adequate understanding between the Ministries and Forest Renewal BC, a set of **ground rules** or **objectives** have been determined. The ground rules set the stage for RMP development, are set by Forest Renewal BC in consultation with the Ministries and are used as a **benchmark** against which the RMP's will be evaluated. The following have been established as ground rules between the Ministry of Forests and the Ministry of Environment, Lands and Parks, and Forest Renewal BC, in the Skeena Bulkley Region:

SUSTAINABLE HARVEST

1. Geographic Units

District is basis for planning; objectives and strategies by rolled up (if multiple) by TSA's and by TFL as distinct units. The Cassiar TSA will be incorporated into the Bulkley TSA. District plans will be collated into a regional plan.

2. Roles and Responsibilities

a. Lead:

The Ministry of Forests will lead the SH RMP process. Paul Perkins is the FRBC contact.

The Ministry of Environment will take a relatively small part in the Habitat Supply and Biodiversity component of Enhanced Forestry. This will happen regionally through identification of knowledge gaps and data compilation/analysis needs with the goal of providing environmental indicators and prescriptions for application at the Management Unit Level. More detailed input will be available for the IFPA planning areas with more site specific projects. MELP input will be from Regional habitat protection staff, district FESs where and when available (minor) and a biologist working with the IFPA group.

Licensees have direct input, existing proponents' input accepted for consideration where put forward or requested. Other stakeholders' input into silvicultural development is and continues to be through LRMP process, which drives objectives. Representatives from Resource Management Committees, Steering Committees, or SLUP may be invited as locally determined. Licensees will lead on TFL's. Current RMP's will be used as a starting point; participant input will be sought and adjustments made to existing plans for this planning year. Substantive agreement is sought on the objectives and strategies by geographic unit, as well as the list of opportunities developed.

b. Steering Committee:

The Steering Committee is composed of: Neil Endacott (MoF), Don Reid (MELP) and Paul Perkins (FRBC).

The Steering Committee will:

- co-ordinate communication;

- filter out issues;
- deal with conflict resolution;
- ensure consistency of format and content.

c. Participation and Attendance:

- Ministry leading the process (MoF) will request participation of stakeholders (licensees, others – as defined above) with timelines appropriate to the reasonable completion of the RMP's.
- Participants must provide input in a timely fashion where provided with reasonable opportunity to participate in the process.
- The Ministries will document both the level of participation and opportunities provided to stakeholders, and include this documentation in the progress report (per attached Matrix) and final RMP.

d. Consultation:

- See also lead roles
- In a process run by the Steering Committee, local planning units will derive a list of participants.
- Participants in RMP process will provide technical information consistent with the RMP guidelines. **The RMP process is not a forum for input of values of a social or investment-planning nature.**

e. Feedback:

- The draft RMP will be fed back to the participants (**by September 12th**)
- Participants to respond back with final comments (**by September 22nd**)

f. Consultation Reports:

- A summary of participant consultation will be provided to Forest Renewal by the Ministries in conjunction with the submission of the RMP. The summary may be provided on the attached participant matrix.

3. Forest Renewal BC Input

a. Performance Targets

- Will be at a Regional level

b. Investment Level Estimates

- Will be at a Planning Unit level

c. Participation in process

- Will commit to having a person available in an advisory role (Paul Perkins)

4. Process for RMP Development

4.1 RMP Content

a. Per Guidelines

- Criteria, strategies, objectives, and ground rules to be established by MoF/Licensees
- Opportunities within the strategies to be identified jointly by participants
- Objectives and opportunities to be ranked (prioritized) where possible

b. Research

- Significant issues requiring further study are to be identified for referral to the research process.
- Issues will be identified as operational (operational trials) or strategic in nature.
- Strategic issues should be defined in context and forwarded to the research process as soon as possible.

c. Outcomes and Performance Measures

- will be included in the new structure, as per the new guidelines (Tab 8, pg. 26 – Performance Measures table)

d. Cost Estimates

- required as per tables
- to be included by opportunity identified
- cost trend activities

4.2 RMP Format

- each unit of the SH component of the RMP will be of consistent format
- by Planning Unit
- collated into the SH component of the Regional RMP
- format will address all the requirements of the RMP guidelines
- Table of Contents to be supplied to each unit to be followed to ensure consistent format

5. Conflict Resolution (around determination of priorities)

a. Preventative measures preferred over reactionary

- Ground rules established by participants prior to plan establishment
- Substantive agreement desired on objectives and strategies
- Priorities must fit with established objectives and strategies
- RMP guidelines provide direction for development of objectives, strategies and priorities

b. Where conflict arises that cannot be resolved locally, the issue will be noted in the RMP as multiple options (for professional differences of resource opinion) or referred to the Regional Steering Committee for resolution and direction.

6. General

a. Ranking of priorities and opportunities will be tied directly to objectives and strategies plan. Main stakeholders develop objectives and strategies using RMP guidelines and Forest Renewal BC's Strategic Objectives.

b. Each RMP will have a discussion of objectives and strategies.

c. General rule is to proceed to objectives with best efforts and using best information available. Where complete information is not available, or optimal solution is not available, make best decisions possible. If necessary, adjustments may be made later when better information or resources are available.

7. Role of RMP in Forest Renewal BC's Investment Plan

The final **RMP's** will be **THE** Source Document for FRBC investments. **The highest priorities and value opportunities identified will be selected for investment.**

B. ENHANCING ENVIRONMENTAL VALUES

1. Geographic Units

The existing RMP will form the foundation for the current RMP development. MoF and MELP will determine the operational watershed units (whole watershed level, landscape level, etc.) for planning purposes. MELP will lead in the identification of key watersheds (high water/fish values) at the regional level. The key units will be used as prioritisation units at the district level for establishment of priority key watersheds (categories I-VI). In aggregate, the work, including tables, maps and introductions will form the WRP portion of the regional RMP. Twenty percent of the priority key watersheds will be targeted for completion. FRBC will lead the latter process as part of the Regional Investment Planning process.

2. Roles and Responsibilities

a. Lead:

MELP will be the lead and will establish and identify key watersheds, and with MoF, jointly submit the plan following consultation with the EEV Steering Committee. Details of the work to be implemented (i.e. at the activity level) will be identified at the workplan stage in conjunction with FRBC workplan development. One of the main functions of the RMP is to identify the priority key watersheds to be worked on. MYA holders are directly involved in Step six of the Attachment A of Appendix II of the RMP guidelines. The DFO will also be invited to provide input as to fish habitat priorities. These participants provide information that would be specifically applicable to the RMP development. Those who have technical input for the RMP will be asked to participate in the development of specific parts of the RMP (i.e. establishing priority key watersheds).

b. Steering Committee:
Members:

- MELP: Jeff Lough (Lead)
- MoF: Howard DeBeck
- FRBC: Bob Purdon
- DFO ??

The Steering Committee will:

- co-ordinate communication;
- filter out issues;
- deal with conflict resolution;
- ensure consistency of format and content.

c. Participation and Attendance:

- Participants must provide input in a timely fashion where provided with reasonable opportunity to participate in the process.
- The Ministries will document both the level of participation and opportunities provided to stakeholders, and include this documentation in the progress report (per attached Matrix) and final RMP.

d. Consultation:

- See also lead roles
- In a process run by the EEV Regional Steering Committee, local planning units will derive a list of participants.
- Participants in RMP process will provide technical information consistent with the RMP guidelines. **The RMP process is not a forum for input of values of a social or investment-planning nature.**

e. Feedback:

- The draft RMP will be provided to the participants for comment (**by September 12th**)
- Participants to respond back to MELP Regional WRP Specialist with final comments (**by September 22nd**)

f. Consultation Reports:

- The attached Matrix will be provided by the ministries as a summary to partner consultation for the purpose of tracking participation and responses

3. Forest Renewal BC Input

a. Performance Targets

- Will be at a Regional level

b. Investment Level Estimates

- Will be at a Planning Unit level

c. Participation in process

- Will commit to having a person available in an advisory role (Bob Purdon)

4. Process for RMP Development

4.1 RMP Content

a. Per Guidelines

- Steps 1-5 of Guidelines Attachment A of Appendix II
- Review existing RMP for consistency with current guidelines; make necessary changes
- Regional identification of key watersheds (watershed atlas)
- Establish key watersheds(H, VH fish and water quality values)
- Step 6 of Attachment A of Appendix II
- District consultation with stakeholders
- Determine Priority Key Watersheds (Category I, II, III, IV, V, VI). These make up the RMP. Details of the activities within priority watersheds are to be developed at the work plan stage.

b. Research

- Significant issues requiring further study are to be identified for referral to the research process.
- Issues will be identified as operational (operational trials) or strategic in nature.
- Strategic issues should be defined in context and forwarded to the research process as soon as possible.

c. **Cost Estimates**

- leave past costs in, pending further discussion
- no future cost estimates

4.2 RMP Format

- The WRP section of the RMP will consist of 3 sections:
    - **i)** RMP description including introduction, description, methods, and objectives
    - **ii)** Watershed tables (Tables 3(a) and 3(b))
    - **iii)** Watershed atlas (maps)
- There will be one WRP section for the RMP for the Region
- Format will address all the requirements of the RMP guidelines
- Table of Contents to be developed to ensure consistent format

5. Conflict Resolution (around determination of priorities)

a. Preventative measures preferred over reactionary

- Ground rules established by participants prior to plan establishment
- Substantive agreement desired on objectives and strategies
- Priorities must fit with established objectives and strategies
- RMP guidelines provide direction for development of objectives, strategies and priorities

b. Where conflict arises that cannot be resolved locally, the issue will be noted in the RMP as multiple options (for professional differences of resource opinion) or referred to the Regional Steering Committee for resolution and direction.

6. General

a. Determination and ranking of priority key watersheds will be tied directly to RMP guidelines and Forest Renewal BC's Strategic Objectives.

b. Each RMP will have a discussion of objectives and strategies.

c. General rule is to proceed to objectives with best efforts and using best information available. Where complete information is not available, or optimal solution is not available, make best decisions possible. If necessary, adjustments may be made later when better information or resources are available.

7. Role of RMP in Forest Renewal BC's Investment Plan

The final RMP's will be the source document for the determination of watersheds to be targeted for completion using FRBC investments. The highest priorities and best opportunity for restoration success identified will be selected for investment.

C. STRENGTHEN SUSTAINABLE FOREST MANAGEMENT

1. Geographic Units

Regional plan with input from the districts on issues, strategies and project recommendations.

2. Roles and Responsibilities

a. Lead:

MoF and MELP will assume a joint lead role in development of RMP. RMP Steering Committee is composed of Don Gosnell (MoF), Don Reid (MELP) and Butch Morningstar (FRBC). A contract facilitator will be hired to co-ordinate the activities of the Regional Strategic and Regional Steering Teams. Level of contribution to the contract to be determined by the RMP Steering Committee.

b. Regional Strategic Team

- The RMP Steering Committee will identify and assemble potential team members.
- Regional Strategic Team will:
  1. provide regional vision and strategic direction
  2. identify key strategic issues
  3. The Regional Strategic Team will provide direction as necessary and review final RMP documents

c. Participation and Attendance:

- Ministries leading the process will request participation of stakeholders with timelines appropriate to the reasonable completion of the RMP's.
- Participants must provide input in a timely fashion where provided with reasonable opportunity to participate in the process.
- The Ministries will document both the level of participation and opportunities provided to stakeholders, and include this documentation in the progress report (per attached Matrix) and final RMP.

d. Consultation:

- See also lead roles
- The steering committee will co-ordinate the establishment of the Regional Strategic Team and the Regional Planning Team;
- The Regional Planning Team will make recommendations for the establishment of local planning teams;
- Participants in RMP process will provide technical information consistent with the RMP guidelines. **The RMP process is not a forum for input of values of a social or investment-planning nature.**

e. Feedback:

- The draft RMP will be fed back to the participants (**by September 12th**)
- Participants to respond back with final comments (**by September 22nd**)

f. **Consultation Reports**:

- Matrix to track participation and responses (attached)

3. **Forest Renewal BC Input**

- **Performance Targets**: Will be at a Regional level
- **Investment Level Estimates**: Will be at a Planning Unit level
- **Participation in process:** Will commit to having a person available in an advisory role

4. **Process for RMP Development**

4.1 RMP Content

a. **Per Guidelines**

- The guidelines (May 2000) will outline the required content of the RMP
- Opportunities within the strategies to be identified jointly by participants
- Objectives and opportunities to be ranked (prioritized) where possible

b. **Research**

- Significant issues requiring further study are to be identified for referred to the research process.
- Issues will be identified as operational (operational trials) or strategic in nature.
- Strategic issues should be defined in context and forwarded to the research process as soon as possible.

c. **Outcomes and Performance Measures**

- If required, will be agreed upon by the RMP steering committee in consultation with the Regional Strategic Team

4.2 RMP Format

- To be determined by RMP steering committee with respect to new guidelines when available
- Table of Contents to be developed for use as a guide.

5. **Conflict Resolution (around determination of priorities)**

a. Preventative measures preferred over reactionary

- Ground rules established by participants prior to plan establishment
- Substantive agreement desired on objectives and strategies
- Priorities must fit with established objectives and strategies
- RMP guidelines provide direction for development of objectives, strategies and priorities

b. Where conflict arises that cannot be resolved locally, the issue will be noted in the RMP as multiple options (for professional differences of resource opinion) or referred to the Regional Steering Committee for resolution and direction.

6. **General**

- **a.** Ranking of priorities and opportunities will be tied directly to objectives and strategies plan. Main stakeholders develop objectives and strategies using RMP guidelines and Forest Renewal BC's Strategic Objectives.
- **b.** Each RMP will have a discussion of objectives and strategies.
- **c.** General rule is to proceed to objectives with best efforts and using best information available. Where complete information is not available, or optimal solution is not available, make best decisions possible. If necessary, adjustments may be made later when better information or resources are available.

7. Role of RMP in Forest Renewal BC's Investment Plan

The final RMP's will be THE Source Document for FRBC investments. The highest priorities and value opportunities identified will be selected for investment.

B. STAKEHOLDER INVOLVEMENT FOR THE DEVELOPMENT OF RESOURCE MANAGEMENT PLANS - SKEENA BULKLEY REGION - 2001/2002 PLANNING YEAR.

EEV

Staff from both MoF and MELP used the broad guidelines outlined in *Guidelines for the Development of RMP's 2001/02- EEV Component* released regionally in May 2000 (available at the following URL: http://www.for.gov.bc.ca/CPP/rmpguidelines/guidelines.htm). These guidelines were augmented with local ground rules that were agreed to by FRBC, MoF and MELP.

As outlined in EEV guidelines the RMP is developed and collated as a regional plan. That being stated, the WRP is delivered, for the most part, at a district level. It was therefore agreed that the framework for the plan was developed at a regional level. Information regarding format was provided to the districts, the districts then compiled the information for their area and submitted it back to region where it was rolled up with the data from all the districts into the regional plan. It is recognized that individual districts have their own unique challenges based numerous factors at play at the district level. The district and regional data for this 2001-2002 RMP was primarily derived from the 2000-2001 RMP. Some minor priority changes were made based on stakeholder recommendations and agency review.

SSFM

- August 9, 2000 – Fax sent to all Licensees informing them of the RMP process for SSFM and requesting their participation;
- August 10, 2000 – District meeting to identify key SSFM issues and knowledge building strategy;
- August 15, 2000 – District meeting to rank SSFM issues and projects;
- August 18, 2000 – Fax sent to all Licensees confirming meeting date to jointly assign priorities;
- August 22, 2000 – Meeting between MoF, MELP, and SCI;
- August 25, 2000 – Issues and projects listing forwarded to SCI for comments;
- August 30 and 31, 2000 – Comments received and incorporated in RMP.

2.0 SUSTAINABLE HARVEST (SH) REPORT

2.1 Regional Silviculture Priorities and Issues

Harvesting forests and milling timber into lumber and chips has been a major industry in the Prince Rupert Forest Region (PRFP) for many years. It was not until 1982 that replanting these forests began in earnest and in 1987 planting trees after harvest became the duty of the logging companies. Since the highest risk in growing forests is at establishment, the government passed legislation requiring the companies to manage these stands, past the establishment stage into a period called Free Growing.

Today, many of these forests are at this free growing stage. It is therefore critical that these forests be set on a management path which will achieve the product objectives set for the timber supply area. These product objectives could include high quality clear logs suitable for value-added industries, large saw logs which minimize the costs of harvesting and processing, smaller sawlogs which maximize the volume produced, etc. Ideally, each timber supply area will have several product objectives to ensure that the economic returns to the diverse land base are maximized. Developing the SH program will help Forest Districts minimize risk yet maintain options for the future of the forests. It is generally provincial policy not to manage areas for pulpwood production. It has always been assumed that "pulpwood" would be produced as a by-product of sawlog regimes from the forest and mill waste in the form of chips.

Some forests in the PRFP have a higher value as unmanaged forests. These natural values include wildlife, fisheries, soil, biodiversity, water quality and visual quality. Some of these forests can produce log products as well, but not at the cost of these other values.

The objective of the sustainable harvest program is to increase the volume, economic value, and health of second-growth forests; maintain or enhance habitat supply and long-term biodiversity of second growth forests; increase the amount of land available for commercial timber production; and support more informed silviculture investment decisions.

The SH component of this RMP contains resource priorities for enhanced and backlog reforestation (blocks that were harvested, damaged or destroyed before 1987 are backlog).

Planned activities must:

- be consistent with acts, regulations, guidelines and priorities set in higher level plans;
- be consistent with government goals;
- include MoF's guiding principles for silviculture;
- incorporate the *Incremental Silviculture Strategy for British Columbia (interim)*;
- consider riparian and habitat issues;

- result in no expected loss of investment due to fire, forest health issues, or alienation of land;
- have reasonable cost estimates within the cost caps provided;
- include activities that fit within FRBC strategic or operational commitments;
- have activities that fit within criteria for forest health maintenance and current fire and pest management.

The SH component of this RMP is broken down by Forest District beginning in the east with the Lakes Forest District and progressing west to the North Coast Forest District. The silviculture priorities for each Forest District are summarized in the next section. Following this section, the Sustainable Harvest Component is reviewed in greater detail, by Forest District.

Although each Forest District attempted to address Sustainable Harvest in a consistent format, a great deal of variability exists between Forest Districts because available information differs, issues are wide ranging and priorities vary.

2.2 Summary for Each Management Unit of Silviculture Priorities

- Lakes Forest District:

The SH component of the RMP for the Lakes Forest District was written in consultation with industry to outline the best possible investments that need to be undertaken within the TSA to ensure a long term, high quality fiber supply, continued employment, and community stability. Stakeholders analyzed several sources of information (i.e. TSR, LRMP, Draft Incremental Silviculture Strategy, Access Management Plan) and identified issues or potential concerns within the Lakes TSA.

District silviculture priorities were established primarily based on these issues. Other factors used to determine opportunities for investment included a review of the commitments and recommendations from other planning processes as well as costs, benefits, risks, timing of delivery and long term implications of treatments.

The district has completed a type I silviculture strategy for the Lakes TSA. The top priorities from this plan are as follows:

1. Plant a mixed species in all future plantations to reduce disease (such as rust). This involves planting a higher amount of spruce than in the past. Increase planting density to mitigate losses through rust infections.
2. Survey and brush backlog satisfactorily restocked areas that are not free to grow.
3. Survey, plant and brush backlog NSR areas.
4. Survey and rehabilitate pine plantations that are NSR due to rust infection.
5. Fertilize stands previously treated that will be harvested in the next 20 years.
6. Space, fertilize and prune the best growing sites for the production of premium quality sawlogs.

The District type I strategy employed 12 participants in a development workshop. Representation from the PRFR, Ministry of Environment, Lands and Parks

(MELP) and the two largest licensees in the Lakes TSA were present. Lakes District Silviculture and Operational staff were also present to help prepare the plan.

The strategy also includes legislated silviculture goals such as necessary treatments to bring a stand to free to grow. These include planting (natural regeneration is rare in the Lakes District), site preparation if needed, surveying and brushing if needed. Maximum density spacing also occurs if the stand exceeds 10,000 stems per hectare.

In summary, the Lakes District priorities, within FRBC's SH Program, are as follows:

1. Forest Health Maintenance Activities.
2. The six priorities of the Type I silviculture strategy which include the Stand Tending, Backlog Reforestation, Site Restoration and Forest Health Enhancement FRBC Objectives.
3. Current Fire and Pest Activities.

- Morice Forest District:

The Morice Forest District critical issues and related objectives were established during the Silviculture Strategy Workshop. Tactical priorities to addressed these issues were assigned through discussion and consensus amongst the participants.

The Morice District priorities are as follows:

1. Basic Silviculture--to maintain current AAC
2. Backlog NSR--to maintain current AAC
3. Habitat Supply
4. Stand Tending Activities--to maintain timber quality.

- Bulkley-Cassiar Forest District:

The Bulkley Forest District and the FRBC MYA holders in the TSA reached consensus that the Bulkley Silviculture Strategy (BSS) be used to develop this RMP.

Silviculture investment priorities are based on the Landscape Planning hierarchy followed by the Stand Planning hierarchy. The Landscape Planning hierarchy incorporates Provincial direction and strategic planning. The elements of the Landscape Planning hierarchy must be considered in the following order:

1. The *Forest Practices Code of BC Act*
2. The Bulkley LRMP
3. Landscape Unit Planning Objectives
4. District Manager Policy.

For example, the Bulkley LRMP provided direction, as outlined in the following table, by ranking silviculture strategies by resource management zone.

LRMP Zones	Backlog	Fall Down	Incremental
Enhanced Timber Development	Very High	High	Very High
Integrated Resource Management	High	High	High
Landscape Corridor	Medium	Low	Low
Special Management Zone 2	Medium	Low	Low
Resource Management Zone	Medium	Low	Low
Other Zones	Low	Low	Low

Moreover, the Stand Planning hierarchy prioritizes obligations at an operational planning level. The stand planning hierarchy in the Bulkley TSA is:
1. Basic Silviculture
2. Backlog Silviculture
3. Silviculture Strategy to Reduce Fall Down
4. Incremental Silviculture
5. Silviculture Strategy for Non-Merchantable Timber Types.

A ranking key was developed by the Bulkley Forest District (Bulkley Silviculture Ranking Key 1999) to incorporate the priorities listed in the Landscape and Stand Planning hierarchies.

- Kispiox Forest District:

Based primarily on the Timber Supply Review recommendations and LRMP strategies and objectives, the Kispiox Forest District staff developed silviculture priorities and met with major licensees for feedback (Kispiox TSA Silviculture Strategy--Type 1). A discussion of silviculture priorities for the Kispiox Forest District follows.

Every five years, the Chief Forester of British Columbia establishes the allowable annual cut (AAC) for each timber supply area and tree farm licence. The Kispiox Timber Supply Review process was last completed on December 30, 1996, when the Chief Forester maintained the AAC at 1,092,611 cubic metres. When he released his determination, the Chief Forester also made several recommendations to the district. Most of these recommendations have been implemented through research within the forest district, but some items may still require further work due to lack of adequate information. These include:

- to investigate the integration of botanical forest products into landscape unit planning; and,
- to identify management strategies for wildlife.

During the determination process, one important factor that was presented to the Chief Forester was a description of not-satisfactorily-restocked (NSR) areas. This is land considered inadequately covered by a sufficient number of tree stems of desirable species as specified in the Ministry stocking standards. Backlog NSR refers to areas harvested prior to 1987 that are in this condition. In the 1995 timber supply review data package, approximately 5,500 hectares were calculated to affect the timber harvesting land base. However, district staff also presumed that all backlog NSR would be restocked by the year 2000. Using this assumption, the Chief Forester did not consider backlog NSR as a downward pressure on timber supply.

Since the 1996 determination, the status of backlog NSR has shifted considerably. Funding levels have plummeted, resulting in far less land being treated. Only 1,800 hectares has been successfully removed from the backlog total, rather than the full 5,500 hectares, which was the original district goal. This information will be incorporated in the next analysis package, which is currently being prepared. Aggressive treatment of backlog land continues to be a district priority, and is reflected in the silviculture portion of the RMP.

The Cranberry Timber Supply Review process was concluded on June 1, 1998, when the Chief Forester maintained the cut at 110,000 cubic metres per year. Similar to his Kispiox determination, the Chief Forester included several recommendations, two of which still require some work:

- to validate an appropriate site index adjustment for single and mixed species; and,
- to refine Operational Adjustment Factors for the Timber Supply Area.

Most of these recommendations should be considered within the FRBC inventory and research funding program, titled ‘Strengthening Sustainable Forest Management’. This program is included in the PRFR’s RMP, rather than in the district plan.

The Silviculture Strategy (Type 1) for the Kispiox TSA (1999) has identified a further 5 issues:

- Identify the portions of the land base at minimum stocking levels, and at targets to refine density values for TIPSY projections
- Identify impact of using VDYP projections rather than TIPSY on backlog stands as to more accurately model the current management – as funding declines, and as funding sources are in flux the volume of area treated declines.
- Investigate the development of economic cut-off values for backlog reforestation efforts and its subsequent impact to the TSR.
- Evaluate the risk of treating land which may be alienated at a later time, and it subsequent impact to the TSR.

Enhanced silviculture treatments hold high to medium priority inasmuch as there are benefits to be realized in the TSR. However, it is important to not divert investment and effort from backlog initiatives to fulfill enhanced forestry strategies. Treating backlog NSR sites with uniform stocking and protecting plantation investments provides greater return on investments than incremental activities. In certain instances, however, financial analysis may reflect otherwise, and is dependent upon comparisons of specific sites.

- Kalum Forest District:

This treatment priority rating guide was jointly developed by the Forest Service, West Fraser Mills Ltd., and Skeena Cellulose. The following table provides direction in determining which areas are treated irrespective of tenure. Upon completion of the Level 2 Silviculture Strategy, this matrix will be reviewed and amended where necessary.

Priority	Activity
1	Backlog brushing, (herbaceous brush where crop tree survival is in immediate jeopardy)
1	Forest health treatments where a pest agent is threatening the survival or health of a stand
2	Planting of NSR blocks
3	Planting of NSR areas (where the program can be spread out over several years)
3	Surveys
3	Spacing
4	Conifer Release
4	Free growing surveys
5	Pruning

A system used to evaluate the value of juvenile spacing in the Kalum Forest District was also developed:

FACTORS	4	3	2	1	No Treatment
Species	Hw, Cw, Ba	Hw - Pl	Pl		Ss
Age	14 – 15 yrs	16 - 20 yrs	21 - 25 yrs	26 - 30 yrs	>30 yrs
Density (st/ha)	4000 – 10000	4000 - 3000	3000 - 2500	2500 – 2000	>2000
Site Index @ age 50	>30	30 - 25	25 - 20	20 – 15	<15
Access		2WD	4WD	Boat	Helicopter
Biodiversity Potential	HIGH	MEDIUM	LOW	NONE	NONE

Rating : Low priority = 0-14
Medium priority = 15-20
High priority = 21+

- North Coast Forest District:

The development of silviculture strategies for TSAs and TFLs is motivated by the desire to clarify the relationship between investments in silviculture and the critical forest-level issues specific to the management unit. The Type 1 analysis is workshop-based. It draws on the expert knowledge of the participants to identify the critical issues, derive objectives with respect to those issues, specify regimes to meet those issues, and identify the regime activities that can be implemented in the next five years.

After consideration of the benefits and costs of each of the activities on each of the forest-level objectives, the participants rank the silviculture activities by priority. The result is a prioritized list of silviculture activities that are explicitly linked to the critical issues of the management unit. Type 2 analyses are model-based, but the analysis process is fundamentally identical to the Type 1 analysis. A forest-level model is used to evaluate the impacts of regimes on the forest-level objectives, to identify the silviculture activities constituting the "preferred management scenario", and to rank those activities.

While many issues were proposed and discussed in the workshop, the participants developed a silviculture strategy that addressed three key issues: protecting seedlings and young trees from damage by porcupine and deer; delaying the falldown projected for decade 3, and investigating items causing uncertainty about site productivity and the size of the timber harvesting land base (THLB).

In terms of issues affecting TFL 25 (Block 5), this area is subject to the CCLRMP processes and is also impacted by the ongoing Coastal Forest Conservation Initiative. It is anticipated that these new factors will put downward pressure on the upcoming AAC.

2.3 Lakes Forest District

2.3.1 Basic Data

The Lakes Forest District is within the Lakes Timber Supply Area (TSA). Basic data for the Lakes TSA includes:

Land Area

Description	Area (ha)	Area (%)
Total Area of TSA	1,123,700	100
Total Productive Crown Forest (TSR I)	866,400	77
Total Crown Forested Land Base (TSR II) and LRMP	786,300	70
Net Timber Harvest Land Base (THLB) (TSR I)	634,500	56

Source: TS analysis report-rounded to nearest 100 ha.
*5% larger than in last analysis

With the approval in principal of the LRMP, the crown forested land base and hence the timber harvesting land base has dropped with the transfer of the Entiako, Sutherland and the Uncha Mountain/Hills Protected Areas to Provincial Park Status. The Net Timber Harvest Land Base for TSR II will drop to approximately 50% of the total TSA area from 56%.

Annual Allowable Cut (AAC)

AAC Type	(m^3)
Conventional (TSR I)*	1,500,000
Deciduous	
Insect/Disease	
Marginal	
Total	1,500,000
Community Forest	23,667**
Woodlot AAC	52,600

*Effective September 1/96
**Included in the Conventional TSR I volume but will not be included in the TSR II volume.

Twenty nine percent (29%) of available timber volume is currently allocated to the Small Business Forest Enterprise Program, 431,518 cubic metres per year (less possible 5% transfer allowance) to Babine Forest Products Company, 367,194 cubic metres per year to West Fraser Sawmills Limited, 130,604 cubic metres per year (less possible 5% transfer allowance) to Babine Timber Limited, 56,449 cubic metres per year (less possible 5% transfer allowance) to Canfor Limited, 23,084 cubic metres per year to L & M Lumber Limited.

The current AAC for the Lakes TSA, excluding the woodlot allocation which is not considered in the TSR analysis, is 1,500,000 cubic metres per year. Under current forest management assumptions, the analysis results indicate that the current harvest level can be maintained for 7 decades. In the eighth decade a 10% decline is projected followed by a 3% decline to a harvest level of 1,310,000 cubic metres per year. A rise to the long term harvest level of 1,441,000 cubic metres per year will occur in decade 18. The Lakes District is undergoing TSR II process which will likely result in an AAC rationale in the spring of 2001.

Site Class Profile

The site class profile is unavailable at this time.

Age Class

Age Class	(%)
NSR	0
0	1
1-20	9
21-40	1
41-140	52
141-250	36
250+	1
Total	100

Source: TS analysis report.

The current age class distribution indicates that over 64% of commercial species on the harvesting land base are over 100 years of age.

Tree Species Profile

The most abundant commercial species is lodgepole pine occurring on 77% of the THLB. Spruce is the secondary species occurring on 21% of the THLB. Sub-Alpine fir is the third most abundant species, generally occurring at higher elevations on cooler moister growing sites.

Incremental Silviculture History

Treatment	Incorporated in Timber Supply Analysis	Not Incorporated in Timber Supply Analysis
♦ Backlog	Restock 2 240 ha in 15 years.	District staff expect backlog to be restocked in 5 years. Surveying and/or reclassifying of the remaining 400 hectares is expected over the next four years.
♦ Conversion	1 000 ha of decid is managed forest.	
♦ Commercial Thin		Only a few experimental CT projects to date.

♦Space	TIPSY used on stands regenerated over the past 20 years. Assumes incremental spacing for stocking control on stands harvested prior to '87.	Approx. 3900 ha incrementally spaced between 1987 and 1994. No spacing has occurred in 2000-2001.
♦Prune		None indicated.
♦Fertilize		Little occurring.
♦Space/ Prune		Combinations not indicated.
♦Space /Fertilize		Combinations not indicated.
♦Space/ Prune/Fert		Combinations not indicated.
♦Other		None indicated.

2.3.2 Issues

A variety of plans including the LRMP and the Incremental Silviculture Strategy are applicable to the Forest District and to the TSA. These plans have been reviewed for commitments, recommendations and opportunities that will address issues and investment needs that are applicable to this RMP for the land based programs.

Presently, there are 40 woodlot licences issued in the Lakes TSA. The woodlot AAC contribution is 52,600 cubic metres per year. Woodlot licensees have basic obligations until "Free Growing". Their silvicultural priorities are similar to District priorities since many of the District issues also affect woodlot licensees.

Individual Issue Analysis

♦ Harvest Forecast	The initial harvest level of 1 500 000 m3 (pre-TSR1 AAC) can be maintained for 7 decades before falling 13% to a mid-term level of 1 310 000 m3. Harvest levels rise in decade 18 to a LTHL of 1 441 000, 4% below the initial level. LTHL is 18% below the productive capacity of the THLB (based on culmination of MAI) due to the impact of forest cover guidelines (analysis, 16). The harvest level for TSR II is likely to increase due to the catastrophic forest health situation in the district as well the TSR II data packages uses an increased estimate for site index for second growth stands that may significantly increase the AAC.
♦ Age Class	Approximately 64% of the THLB is covered by stands greater than 100 years of age. Age class gaps occur in the 30-50 and 90-100 year age ranges due to fewer disturbances during those periods from events such as catastrophic insect, wind and fire damage. CF satisfied age class is not a limiting factor (rationale, 17-18). However the 30-50 year gap is likely a factor in the mid-term shortfall, causing older timber to be held longer to minimize the gap. See "Issues generally not addressed," below.
♦ Forest Cover	*IRM, Winter Range, Riparian, Sutherland Valley Zones*: 72% of THLB. Base case requirement of at most 33% of THLB permitted to be < 3 m tall (3 pass system).

Sensitivity test of + 1,2,3 passes. CF satisfied adjacency requirements of the base case adequately reflect current practice (rationale, 26).

Relaxation: Not analyzed.

Increase: (4, 5, 6 passes) Insensitive to 4, 5 pass requirement (max. 25% and 20% of area < 3 m tall). **Very sensitive** in the short term to a 6 pass requirement (max. 17% < 3 m tall), causing a decline of 8% below base case in 1st decade and 21% in the 2nd decade. Same as base case thereafter.

Visual Quality Zones: 24% of THLB (4% retention, 20% partial retention). Base case requirement of at most 2% (retention), and 12% (partial retention) to be < 6.5 m tall. Sensitivity test of ± 8% to both categories.

Relaxation: (+8%) Slight sensitivity in short term (+3%). **Very sensitive in mid term**, eliminating the base case shortfall (18% above base case). **Very sensitive in long term** (7% higher than base case) considering the VQ zones are only 24% of the THLB.

Increase: (-8%, changes retention to preservation and partial retention to retention) Short term insensitive; same as base case for 1st 6 decades. Moderately sensitive thereafter; mid term shortfall and LTHL 7 % and 5% respectively below base case.

Winter Range, Caribou Corridor and Riparian Zones: 12% of THLB (5%, 4% and 3% respectively). Combined sensitivity tests of changes to old growth ages and 6 to 10 pass harvesting systems. No change to base case for 7 decades. Relatively small changes thereafter.

Green-up: Ages are 16-18 yrs for 3 m green-up (IRM, Wildlife & Sutherland zones), 25 yrs for 5 m (riparian zone), and 27 yrs for 6.5 m (VQO zones) Sensitivity test of ± 5 years. Insensitive over 1st 7 decades.

Decrease: (- 5 yrs) Slight sensitivity. Extends initial harvest level 2 decades longer than base case. Mid and long term harvest levels increased about 3%. Timber availability is increased in caribou corridor and VQO zones where the forest cover requirement is constraining. These zones are always at the limit (analysis, 43). Green-up age plays no direct role in the other zones (analysis, 35-36).

Increase: (+ 5 yrs) Moderately sensitive in mid term (7% below base case). Slight sensitivity in long term (2% reduction).

The approval in principal of the LRMP has moved the Sutherland area and some of the important winter range areas into protected status.

Visual green up has been changed in TSR II to a variable green up measure ranging from a minimum of 3.0 m to above 8 m dependent on slope as described in the LRMP document. Because of the relatively flat terrain, this change is expected to relax timber constraints on the landbase. The caribou migration zone south of Ootsa Lake as been protected by a higher level plan as part of the LRMP. This area has both green-up conditions and age conditions placed on the landbase. At present this area is being heavily attacked by mountain pine beetle and it is difficult to estimate the outcome from the current infestation. Infestation levels in some areas south of Ootsa Lake have approached 100%.

- Backlog NSR — 2 240 ha of backlog NSR. Assumed in analysis to be restocked within 15 years, however district expects this to actually occur within 5 years. The current backlog NSR in the Lakes District as of August 2000 is less than 400 hectares.

- Quality (PFT) — 61 228 ha of PFT's were completely removed from the THLB. PFT's are defined as pure sub-alpine fir stands, sub-alpine fir stands with < 30% spruce or pine content, all mature stands < 19.5 m tall, all stocking class 4 PL leading stands, and Pl stands with significant aspen and cottonwood components. About 92% of PFT's are height class

	2 Pl (50 770 ha), with approximately 40% of these located in the IRM zone. CF concludes approximately 20 000 of this may be merchantable. When combined with the 5 832 ha of subalpine fir that should not have been deducted, CF estimates this represents a potential 4% increase to the THLB in the short term (rationale, 14-15) CF accepts some harvesting has been occurring in PFT's and that some stands could become economically operable (rationale, 15). Short pine problem forest type stands have been changed from stands less than 19.5 m to stands less than 17.5 m for TSR II.
♦ Quality (Low sites)	39 713 ha of low site deducted from the THLB. District estimates about 9 700 ha of this is treatable Pl. CF does not consider this in AAC as no plans are in place (rationale, 12).
♦ Quality (Deciduous)	All deciduous forest types completely deducted from the THLB (40 973 ha), almost half of which are in the VQO zone. Approximately 1 000 ha are managed stands and should not have been deducted. Deciduous component of coniferous leading stands excluded during yield curve creation. District staff estimate 70% of stands are non-merchantable. Little harvesting in these types to date. (rationale, 13-14)
♦ Older Forests	Base case includes older forest requirement of 50% of the riparian zone (3% of THLB) having stands older than 120 years and 35% of the winter range zone (5% of THLB) being maintained with stands older than 100 years. The *Interim Regional Timber Harvesting Guidelines* contain an objective of maintaining 12% of the landscape in an old growth condition. Sensitivity tests of removing the base case constraints (relaxation) and of adding a constraint that 10% of stands in all other zones must be greater than 140 years (increase). The 10% was chosen because a portion of the 12% objective may be met by forests outside the THLB. Short term insensitive to either. Relaxation: (removal of base case constraints) **Highly sensitive**, given the affected zones comprise only 8% of the THLB. Initial harvest level can be maintained for 11 decades (4 longer than the base case). Harvest level is 2-3% above base case thereafter. Increase: (add requirement of 10% of stands must be > 140 yrs in Sutherland and IRM zones, 64% of the THLB) **Moderately sensitive**. Depending upon the chosen harvest flow objective, can either shorten time until fall down or deepen mid term shortfall in comparison to base case. LTHL about 6% below base case in either event.
♦ Min. Harvest Ages	Ages based on culmination ages (80 - 130 yrs for Pl and Pl leading, 105 - 165 yrs for other species except poor-site spruce aged 251+ which is 210 yrs). Sensitivity analyses of ± 10 yrs. Short term insensitive to either. Moderately sensitive in the mid term. Decreasing ages 10 years maintains the initial harvest level one decade longer (8 vs. 7), reduces the mid term shortfall 3% and raises harvest to LTHL 2 decades earlier than the base case. (Normally, lowering ages below the culmination age lowers the LTHL, however in this case this effect is more than offset by the relief of other constraints that restrict harvests.) Increasing ages has generally the reverse effect, bringing on falldown 1 decade earlier (6 vs. 7), increasing the mid term shortfall 2% and lowering LTHL 3% from the base case.
♦ Silvicultural Systems	Mostly clearcut. 100% of areas are planted with a regeneration delay of 2-3 years. Partial cutting is increasingly being used in riparian areas. CF expects selection systems will play an increasingly important role and expects district staff to examine the use of alternative silvicultural systems with a view to understanding the short- to long-term timber supply implications (rationale 23-24).
♦ Estimates of	VDYP used for existing stands >20yrs. TIPSY used for regenerated stands and

Timber Volumes	existing stands 20 years and under. Given the same site productivity, managed stands are expected to yield 20% more volume than natural stands (rationale, 21). OAF1 – 15%, OAF2 – 5%. *Existing stand volumes*: Sensitivity test for ± 10% in volume. Long term insensitive. Increase: (+10%) Moderately sensitive in short and mid term. Increases volumes in 1st 5 decades by 8% followed by a drop to essentially the LTHL, **virtually eliminating the mid term shortfall of the base case** (visual estimate from charts). Decrease: (-10%) Causes a drop to the mid term shortfall level 4 decades earlier than the base case (3 vs. 7). Otherwise insensitive. *Regenerated stand volumes*: Sensitivity tests for ± 25% in volume. Short term insensitive to either. **Highly sensitive to both in long term**. Increase: (+25%) Initial harvest level maintained for 14 decades, 7 longer than base case (**eliminates mid term shortfall**). LTHL 24% higher than base case. Decrease: (-25%) LTHL 25% lower than base case.
◆ Site Productivity	Recent studies indicate site indices for managed Pl stands may be underestimated by 22% (SI 20.1 m revised vs.15.6 m current). In addition to the direct growth impact this may have on timber supply, this can also indirectly affect timber supply by lowering the min. harvest ages of medium and poor site pine (from 90 and 120 yrs respectively to 60 yrs) and lowering green-up ages by 2 to 4 years. The cumulative effect of a site index increase in the IRM zone only is estimated to be **a 16% increase in initial harvest levels** because the large amount of existing mature growing stock can be harvested at a higher rate (rationale, 20). **The long term increase is 49%** (analysis, 39; this is more likely about 45% when the SBPS biogeoclimatic zone is excluded - see rationale, 20). It is largely this factor that causes the CF to consider raising the AAC (see "AAC Determination," below). Also, higher estimates of productivity could result in some low sites being reclassified and added to the THLB (this is not assessed). Not all of the increase may be realized, however, as some stands may be held beyond culmination age to meet old-growth or other requirements (see analysis, 39). **This increase in site index is included as the base case for TSR II.**
◆ Land Use	Harvesting has been delayed or deferred on almost 100 000 ha, 15.7% of the THLB, pending the outcome of planning processes and land use decisions. This is resulting in an increasing difficulty in locating wood supply for current harvests. Sensitivity analysis indicates that decreasing the land base by 5% causes the drop from the initial harvest level to the mid term shortfall level to occur 3 decades earlier than in the base case (i.e. it begins after 4 decades vs. 7 in the base case) but does not increase the mid term shortfall. A 20% land base decrease brings the drop 2 decades earlier yet (so that it begins after only 2 decades) and significantly lowers the mid term harvest level below that of the base case by 24%. LTHL is reduced 5% and 20% respectively with 5% and 20% reductions to the THLB.
◆ AAC Determination	The CF considered raising the AAC but did not after concluding it would be: • premature until there is increased understanding of the implications of the site productivity studies, the Code, and the harvesting of problem forest types; as well as, prudent to await the outcome of anticipated land use decisions.

Summary of TSR Issues by Period

Issues Generally Not Addressed

The following issues were generally not addressed in the timber supply analysis or chief forester's rationale:

1. Age class gaps.

There are two age class gaps in the 30-50 and the 90-100 year ranges. The Chief Forester's conclusion that age class gaps are not a limiting factor is with respect to the immediate AAC determination. The 90-100 year gap likely can be covered by the large quantity of existing mature timber. The 30-50 year gap is more problematic and likely has a significant role in creating the mid term shortfall in timber supply. In the harvest queue, this age range falls immediately before the regenerated stands which, although they have much higher volumes than existing stands, cannot contribute to overcoming the age class gap because they are unavailable until they pass the minimum harvest age. Consequently, in order to meet harvest flow criteria, the only way the low volumes associated with an age class gap can be compensated for is by holding a reserve of existing timber from the older age classes immediately preceding it. (The analysis report states there is a need to hold a reserve of existing timber to avoid serious shortfalls in decades 11 to 14.) Incremental silviculture practices such as fertilization and commercial thinning may offer the potential to mitigate the AAC effects of the 30-50 year age range gap. With both Mountain Pine Beetle and Spruce Beetle attacking stands greater than 100 years of age throughout the district, it looks increasingly doubtful if it is possible to hold in reserve older age classes for harvesting at a later time period.

2. Rehabilitation of PFT's, deciduous stands and low site productivity stands.

A total of approximately 142,000 ha of PFT's, deciduous stands and low-site stands are removed from the THLB. Of this, district staff estimate roughly 42,000 ha have potential for rehabilitation or merchantability. This treatable area is equivalent to 7% of the existing THLB.

These areas presents an opportunity for a partitioned AAC which, given the right economic and market circumstances and in combination with an incremental silviculture rehabilitation program, could partially offset AAC reductions that can be anticipated as a result of pending land use decisions.

3. Accelerating the harvest of older pine to prevent losses.

The Chief Forester recognizes the life span of pine stands to be 180 years (rationale, 18). He also notes there is a risk of catastrophic beetle outbreak due to the abundance of mature pine (rationale, 39). Yet, existing growing stock is not removed before decade 20 in the partial retention zone and in the retention zone not before the planning horizon ends at 400 years (analysis, 19). There therefore is a possible loss of mature timber because it is not harvested soon enough. Where timber is not lost altogether, there is the risk of losing volume to insects, disease or decay. Incremental silviculture programs, such as those oriented to filling in the age class gap, could enable the sooner harvest of older stands, thereby preventing the loss of volume to old age and yet still meet environmental goals.

Short Term (1-20 yrs)
The current harvest rate is highly stable. With one exception, sensitivity tests indicate that it is unaffected for at least 30 years. The exception is were forest cover constraints in the IRM, winter range, riparian and Sutherland Valley zones to increase to a 6 pass system, substantial reductions would result in the first 2 decades. However, such constraints are not likely to be required over much of the these zones and consequently the modeled harvest reductions are also not likely.

Short term harvest rates may increase dramatically as a result of reclassification of site productivity, having the potential to immediately increase harvests 16-25%. This reclassification is the base case of TSR II.

In conclusion, there is little, if any, need for incremental silviculture to maintain timber supply in the short term. However, there may be a need to initiate programs which will enable the increase of short term harvests to capture older pine volumes before they deteriorate or are lost entirely. This can be done actively through initiating incremental silviculture programs targeted to increasing existing stand volumes, or passively result as a consequence of the site index adjustment.

Mid Term (21 - approx. 150 yrs)
The sensitivity analyses indicate a number of factors have the potential to extend the current harvest level further than the 7 decades in the base case. It is extended:

- 4 decades when older forest requirements are removed;
- 2 decades when green-up ages are decreased 5 years; and
- 1 decade when minimum harvest ages are decreased 10 years.

The sensitivity analyses also indicate a number of factors have the potential to completely eliminate the base case mid term shortfall. These are:

- the site index reclassification, which not only eliminates the mid term shortfall but also enables significantly higher harvest levels over the entire planning horizon;
- increasing regenerated stand volumes 25%, which not only eliminates the mid term shortfall but also allows harvest levels to be increased above the initial harvest rate starting in the 15th decade;
- increasing existing stand volumes 10%; and
- the removal of the older forest cover constraints from the visual quality zones.

In conclusion, silviculture actions such as increasing regenerated stand volumes, fertilizing existing stands to increase their volumes, and commercial thinning may have potential to reduce or eliminate the base case mid term shortfall.

The preliminary reports from TSR II analysis suggests that there is unlikely to be a shortfall in the midterm because of the site index reclassification.

Long Term (approx. 151+ yrs)
The long term exhibits sensitivity to changes in regenerated stand volumes. For every 1% increase or decrease in volume, there is a corresponding approximate 1% increase or decrease in the LTHL.

The long term is very sensitive to relaxing the forest cover constraints in the visual quality zones. Increasing the area allowed to be below green-up age by 8% results in a 7% increase in the LTHL.

Adding an older forest constraint such that at least 10% of the IRM zone must have stands older than 140 years lowers the LTHL 7%.

In conclusion, there is a potential to use alternative silvicultural systems as well as commercial thinning in suitable stands in these zones, which are alternatives to relaxing constraints but which should give the same increase in harvest levels as indicated in the analysis when the constraints were relaxed. Similarly, accelerating the growth of trees so that the characteristics of older forests are achieved sooner could help offset a volume reduction associated with the broad implementation of the region's older forest constraint.

Future
The Protected Areas Strategy (PAS) areas have been declared and will be built into the TSR II data package. This has resulted in a decrease in the TSR Landbase.

Issues Highlighted

The most recent Timber Supply Review (TSR), completed in 1994, found that for the most part, the Lakes TSA has a "robust" timber supply. Recently, however, the Mountain Pine Beetle (MPB) epidemic, particularly in the southeast portion of the TSA have made this forest health issue the most critical concern in the District. Failure to act in an expedient manner to curb this epidemic will result in a severe risk to timber supply within the TSA. For the year 2000-2001, it is expected that up to 80% of the districts AAC will be salvaging beetle infested stands. In this year, an epidemic level of Spruce Beetle has occurred in the mid and northern part of district. The expected salvage rate for spruce beetle is about 300,000 cubic metres per year for the next three years.

Another forest health issue that is having a major impact on activities within the District are Lodgepole Pine stem rusts (commandra, western gall rust, stalactiform). In the past, +/- 2,000 ha/year of immature stands have been spaced within the TSA. Because of the rust concerns, the District has reduced the juvenile spacing program to fewer than 250 ha/year. In the 2000-2001 year of operations, no juvenile spacing was carried out.

2.3.3 Opportunities to Increase Timber Supply

With the Mountain Pine Beetle and Hard Pine Rust infestations reaching epidemic levels, issues and opportunities associated with maintaining or improving the health, vigor and vitality of the forested land base overshadow those of silviculture. Strategies to address these forest health issues include:

- Completing overview flights of pine and spruce stands within the TSA yearly using fixed and rotary wing aircraft.
- Carrying out Beetle line transects in high hazard types to find green attack.
- Completing ground surveys and/or including affected areas in harvesting plans, falling and burning, and if necessary, baiting pests.
- Researching emergency measures to counteract problem i.e. Park Burn.
- In terms of Pine stem rusts, reducing amount of juvenile spacing, gathering inventory information (OIP) and researching other possibilities i.e. rust resistant stock.

Because of the rapid increase in the Mountain Pine Beetle epidemic and the advent of the Spruce Beetle Epidemic in the current year, any strategy to reduce the impacts of the beetle epidemic in the Lakes District will be actively pursued.

Potential Strategies by Response Time Frame

Response Time Frame	Objective/Action	Anticipated Result
◆ Short Term (1-20 yrs)	1. Monitor site index adjustments and confirm expected harvest level impacts as predicted in the TSR II data package. 2. Fertilize suitable existing Pl stands 10 years prior to planned harvest to raise existing stand volumes.	Increase short term harvest levels 10% (net of other downward influences). Enables earlier harvest of older Pl stands.
◆ Mid Term (21 - approx. 150 yrs)	1. Eliminate backlog NSR. 2. Conduct a spacing/CT/fertilization regime to increase the volume of existing thrifty older immature and young mature stands by 10% and to reduce minimum harvest ages by 10 years. 3. Reduce green-up ages 5 years and minimum harvest ages 5 years by: • using A class seed or better; • using large planting stock; • eliminating voids to reduce TIPSY OAF1 factor. • multiple fertilization of suitable regenerated stands. 4. Salvage harvest/rehab 500 ha/yr. of PFT's or	Maintain higher harvest levels achieved in the short term through the mid term. Eliminates mid term shortfall.

Response Time Frame	Objective/Action	Anticipated Result
	low sites. 5. Rehabilitate pine stands that are now NSR due to hard rust infections	
◆ Long Term (approx. 151+ yrs)	1. Increase the volume of regenerated stands 20% by: • using A class seed or better; • using large planting stock; • eliminating voids to reduce TIPSY OAF1 factor; • multiple fertilization of suitable regenerated stands.	Increase LTHL a further 10% over that achieved through the short and mid terms. Captures the productivity associated with higher site indices.

Potential Treatments and Analysis Results

Treatment	Comment	Treatable Area
◆ General		
◆ Spacing		
◆ Fertilization	A more intensive fertilization program, combined with spacing and commercial thinning programs on suitable stands may: • increase mid term harvests by effectively lowering minimum harvest ages; • increase long term harvests by increasing total volumes.	Large area in lodgepole pine which generally responds to fertilization.
◆ Commercial Thinning	To date no proven performance in CT. Presents an option for increasing mid term harvest levels when combined with other intensive forestry practices.	Approximately 11% of pine forests in the THLB 40-80 years of age and may be candidates for CT.
◆ Backlog NSR	Less than 400 hectares of backlog NSR to be restocked within 5 years. No additional opportunity.	
◆ Rehabilitation	Rehabilitation of pine stands that the hard rust epidemic has made NSR. Once backlog program is complete, efforts could carry on to convert/ rehab PFT's, deciduous and low site areas.	Approximately 2000 Hectares of area may need to be treated. 142 000 ha of PFT's, decid, low site.

Working Targets

Important targets for the District in terms of timber supply are:

- Managing the resource to comply with the TSR. The current harvest level can be maintained for 7 decades. In the eighth decade, a 10% decline is projected followed by a 3% decline to a harvest level of 1,310,000 cubic metres per year. This decline is expected to be less with the analysis prepared for TSR II. Increasing and maintaining the timber supply will still be a priority especially when faced with increased beetle salvage operations.

- Stemming the damage caused by MPB.

2.3.4 Opportunities to Improve Timber Quality

Because of the increasing threat to the TSA caused by Hard Pine Rust, the effects of incremental silviculture may compromise the future quality of the timber resource. Fortunately, the Lakes TSA already has a high proportion of high quality stands. Approximately 85% of timber harvested in the TSA is sawlog quality. To maintain this level of timber quality, the District replants with high quality seedlings and minimizes the need to space by ensuring that seedlings are planted to a high standard.

The District plans to increase the supply of quality timber by rehabilitating Problem Forest Types and low site productivity stands, which amount to 7% of the THLB.

The effects of incremental silviculture on the future quality of the timber resource were not analyzed in the timber supply review.

Potential Strategies by Response Time Frame

Response Time Frame	Strategy/Action	Anticipated Result
♦ Short Term		
♦ Mid Term	Space, Prune and fertilize the best 1% pure pine stands in the TSA that are not impacted by rust infection.	Produce premium saw logs on approximately 1% of the landbase.
♦ Long Term		

Potential Treatments and Analysis Results

Treatment	Comment/ Potential Treatment Regimes	Treatable Area
♦ Incremental Silviculture		
♦ Spacing		
♦ Commercial Thinning	No CT at time of analysis.	
♦ Pruning		
♦ Space/ Prune		
♦ Space/ Prune/Fert	As part of the premium saw log program.	Approximately 2500 ha. 50 ha treated per yr.
♦ Other		

Working Targets

In terms of timber quality, the District is working to maintain the high proportion of quality timber in the THLB as well as 1% of its AAC coming from premium quality sawlogs.

2.3.5 Lakes Forest District Sustainable Harvest Data

The Tables of Opportunity follow. They describe proposed activities and required funding levels for the TSA.

2.3.5.1 Enhanced Forestry Table

Activities	Treatment Area Goals (ha)					Plan 2001/02	
Stand Tending	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	400	400	400	400	400	55.00	22000
Spacing	50	100	100	200	400	450.00	22500
Pruning	50	50	50	50	50	800.00	40000
Fertilizing	3500	800	800	800	800	300.00	1050000
Other	800	800	800	800	800	2.00	1,600
Totals hectares	4800	2150	2150	2250	2450	236.69	1,136,100
Planning and prescriptions							0
Total dollars							1,136,100

Forest Health Enhancement

Spacing	0	0	0	0	0	0.00	0
Pruning	0	0	0	0	0	0.00	0
Rust Infested Stand Rehab*	800	800	800	800	800	809.38	647500
Totals hectares	800	800	800	800	800	809.37	647,500

*includes 800 ha of underplanting and 3500 ha of identifying surveys for year 2001/2002

Habitat Supply and Biodiversity Enhancement

Treatments	0	0	0	0	0	0.00	0

Domestic Range

Treatments	0	0	0	0	0	0.00	0

Enhanced Forestry Activities - Management Unit Total

Surveys	400	400	400	400	400	55.00	22,000
Spacing	50	100	100	200	400	449.99	22,500
Pruning	50	50	50	50	50	799.98	40,000
Fertilizing	3500	800	800	800	800	300.00	1,050,000
Other stand tending activities	1600	1600	1600	1600	1600	405.69	649100
Totals hectares	5600	1350	1350	1450	1650	318.50	1,783,600
Planning and prescriptions							0
Studies funding							0
Total dollars							1,783,600

2.3.5.2 Backlog Program Table

Activities	**Treatment Area Goals (ha)**					**Plan 2001/02**	
Legal Obligations	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	0	0	0	0	0	0.00	0
Site preparation	0	0	0	0	0	0.00	0
Planting	0	0	0	0	0	0.00	0
Brushing	0	0	0	0	0	0.00	0
Max. density spacing	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Seed purchase	0	0	0	0	0	0.00	0
Total legal obligations							0
Backlog Reforestation							
Surveys	100	100	100	100	100	29.00	2900
Site preparation	50	50	50	50	50	500.00	25000
Planting	50	50	50	50	50	500.00	25000
Brushing	0	0	0	250	250	0.00	0
Totals hectares	200	200	200	450	450	264.50	52,900
Seed purchase	300	0	0	0	0	33.33	10,000
Prescriptions and planning dollars							0
Total backlog reforestation							62,900
Impeded areas							
Surveys	5000	3000	3000	3000	3000	30.00	150000
Brushing	500	500	500	500	500	450.00	225000
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	5500	3500	3500	3500	3500	68.18	375,000
Prescriptions and planning dollars							0
Total impeded areas							375,000
Site Restoration							
Fill planting	400	400	400	400	400	30.00	12000
Rehabilitation	0	200	200	200	200	0.00	0
Reforestation	0	0	200	200	200	0.00	0
Totals hectares	400	600	800	800	800	30.00	12,000
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning dollars							0
Total site restoration							12,000
Backlog Program Activities - Management Unit Total							
Surveys	5100	3100	3100	3100	3100	29.98	152900
Site preparation	50	250	250	250	250	499.98	25000
Planting	450	450	650	650	650	82.22	37000
Brushing	500	500	500	750	750	450.00	225000
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	6100	4300	4500	4750	4750	72.11	439900
Seed purchase	300	0	0	0	0	33.33	10000
Prescriptions and planning							0
Recommended studies							0
Total backlog program							449,900

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

2.3.5.3 Performance Measures Based on Activities Planned for 2001/2002

	Performance Measure	Tree Improvement	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A	**Planned treatment area (ha) in 2001/2002**	450	0	1,815	50	450	500	50	50	3,500	8,465	
1.0	**Timber Supply**											
1.1	Potential volume/ha gain (m3/ha/yr)	0.34	0	0.25	0	1.9	0.25	0	0	0.40		
1.2	Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3	Pot. tot. merch. vol. increment in 65 yrs (m3)	9,945	0	29,494	0	55,575	8,125	0	0	91,000		**194,139**
1.4	Est. yrs reduced to achieve mngt objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4	Est. area that will be reclass. as stocked (ha)			50								**50**
1.5	Est. area declared as free growing (ha)			2,000								**2,000**
2.0	**Wood Value**											
2.1	Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0	**Employment**											
3.1	Estimated short term employment (person days/ha)	0.1	0.34	0.1	0.95	2	2.61	3.96	4.54	0.18	0.1	
3.2	Estimated total employment (person days/year)	45	0	182	48	900	1,305	198	227	630	847	
3.3	Estimated total full time equivalent positions (FTE)	0	0	1	0	5	7	1	1	4	5	**24**
4.1	**Forest Health Enhancement (ha)**											**800**
5.1	**Habitat Supply**											
5.2	Planned area for specific wildlife forage or habitat creation in 2001/2002 (ha)											**0**
5.3	Est. area with secondary value provided to biodiversity (ha)											**0**

2.3.5.4 Studies Table

No studies are proposed, at this time.

2.3.5.5 Management Unit Summary Table

Woodlot information is not included in this section.

	Treatment Area Goals (ha)					Plan 2001/02	
	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	5,600	1,350	1,350	1,450	1,650	318	1,783,600
Planning, prescriptions and seedlings							0
Backlog Program Field Activities	6,100	4,300	4,500	4,750	4,750	72	439,900
Planning, prescriptions and seedlings							10,000
Totals	11,700	5,650	5,850	6,200	6,400		2,233,500

Performance Measures

Potential total merchentable volume increment in 65 years	194,139 m^3
Estimated ha that will be reclassified as stocked	50 ha
Estimated ha that will be declared as free growing	2,000 ha
Estimated total full time equivalent positions generated	24 FTEs
Forest health enhancement area	800 ha
Planned area for specific wildlife forage or habitat creation	0 ha
Estimated area with secondary value provided to biodiversity	0 ha

2.3.5.6 Woodlot Program Table

The woodlot program for the Lakes Forest District is based on an extension plan developed in 1998 where each woodlot was assessed for silviculture needs.

	Treatment Area Goals (ha)					Plan 2001/02	
	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities							0
Planning, prescriptions and seedlings							0
Backlog Program Field Activities	94					720	67,968
Planning, prescriptions and seedlings		571	530	546	137		30,260
Totals	94	0	0	0	0		98,228

2.4 Morice Forest District

2.4.1 Basic Data

The Morice Forest District is within the Morice Timber Supply Area (TSA). Basic data for the Morice TSA includes:

Land Area

Description	Area (ha)	Area (%)
Total Area of TSA	1,498,700	100
Total Productive Crown Forest	1,003,400	67
Net Timber Harvest Land Base (THLB)	634,400	42

Source: 1996 TS analysis report-rounded to nearest 100 ha.

Annual Allowable Cut (AAC)

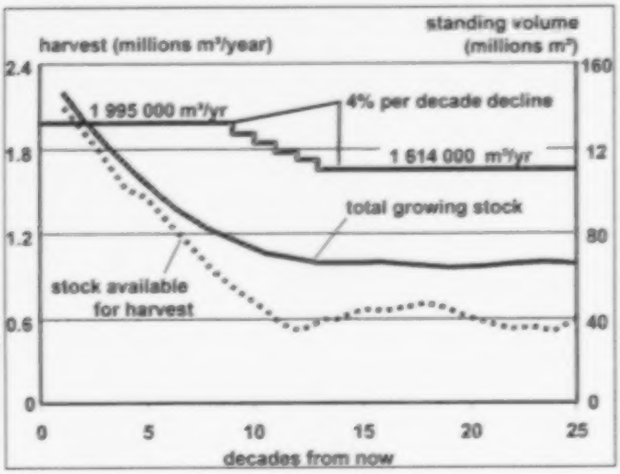
AAC Type	Pre-TSR (m^3)	TSR1* (m^3)	Change (%)
Conventional	1,985,815	1,985,815	0.0
Deciduous			
Insect/Disease			
Marginal			
Total	1,985,815	1,985,815	0.0
Woodlot AAC	Not included in conventional AAC	14,185	

*Effective September 1/96

TSR1 described the AAC division between licensees as follows:

> *Northwood Pulp and Timber is the largest licensee with 53.4% of the total available AAC. Houston Forest Products has the second largest licence at 35.7% and the Small Business Forest Enterprise Program has been allocated 9.3% of the AAC. Forest Service Reserve (0.8%) and other licenses (0.8%) comprise the remaining cut.*

According to the Timber Supply Analysis of February 1996, the AAC for the Morice TSA, excluding a woodlot allocation of 14,185 cubic metres per year which is not considered in the TSR analysis, is 1,995,000 cubic metres per year. The timber supply analysis suggests that the current harvest level of 1,995,000 cubic metres can be maintained for 90 years, followed by a 4% decline per decade for 6 decades to a long-term harvest level of 1,614,000 cubic metres per year (see figure below). This represents a 19% reduction from the current harvest level. As mature stocks are depleted from the inventory, the average harvest age will decline gradually until period 11 when the average age will reach 85 years. The average volume per hectare will follow the same trend and will decrease from 350 cubic metres per hectare to approximately 250 cubic metres per hectare. The harvest forecast is shaped by the current surplus of mature growing stock. Over time, the total growing stock will decline until it reaches an even-flow level of second growth stands becoming available for harvest. The current timber supply forecast does not indicate any shortfall other than the distant transition to the LTHL.



Site Class Profile

The site class profile was estimated using the Morice District Forest Inventory Planning Files.

	Classes (%THLB)				
	undetermined	low	poor	medium	good
Morice TSA	7.9%	1.3%	18.8%	44.0%	28.1%

Age Class

Age Class	(%)
NSR	1
0	2
1-20	12
21-40	1
41-60	2
61-80	11
81-100	7
101-120	9
121-140	14
141-250	36
250+	5
Total	100

Source: TS analysis report

The current age class distribution indicates that 64% of commercial species on the harvesting land base are over 100 years of age.

Tree Species Profile

The most abundant commercial species is lodgepole pine occurring on 54% of the THLB. Spruce and balsam are the secondary species each occurring on 23% of the THLB.

Incremental Silviculture History

Treatment	TRS I Status (1996)		*CURRENT STATUS (1999)*
	Incorporated in Timber Supply Analysis	Not Incorporated in Timber Supply Analysis	
◆Backlog	5,300 ha of backlog NSR. Time frame for rehabilitation not specified.		5,592 ha of NSR identified. Approx 2,022 ha can be restocked. TSR I assumed all areas regenerated.
◆Conversion		None indicated.	
◆Commercial Thin		Experimental. 250 ha CT'd in the 2 yrs prior to the analysis.	
◆Space	TIPSY used on stands regenerated over the past 20 years. Assumes incremental spacing for stocking control on stands harvested prior to 1987.	Only a small portion of THLB spaced. One licensee has FRBC funding to assess overstocked Pl for spacing.	Approx 6,500 ha spaced since 1973
◆Prune		None indicated.	688 ha pruned since 1991. All areas pruned were previously spaced.
◆Fertilize		Only a small portion fertilized.	3,246 ha fertilized since 1987. All areas fertilized were previously spaced or spaced and pruned.
◆Space/Prune		Combinations not indicated.	
◆Space Fertilize		"	
◆Space/Prune/Fertilize		"	

2.4.2 Issues

The 1996 Morice Timber Supply Analysis (TSA) and the *Type 1 silviculture strategy* (2000) documents were used to identify TSA issues and land based investment opportunities for the SH component of this RMP.

Presently, there are 32 woodlot licences issued in the Morice TSA. The woodlot AAC contribution is 14,185 cubic metres per year. Woodlot licensees have basic obligations until "Free Growing". Their silvicultural priorities are similar to District priorities since many of the District issues also affect Woodlot licensees.

Individual Issue Analysis identified from the Timber Supply Analysis

♦ Harvest Forecast	The pre TSR AAC of 1 995 000 m3 (2 000 000 less an assumed woodlot AAC of 5 000 m3) can be maintained for 90 years after which it declines at a rate of 4%/decade to a long term harvest level in 140 years of 1 614 000 m3, 19% lower than the initial level.
♦ Age Class	Approximately 56% of THLB in stands > 120 years old. Very few stands aged 21 to 60 years old.
♦ Forest Cover	*IRM Zone*: 88% of THLB. Base case requirement of at most 25% of THLB permitted to be < 3 m tall (4 pass system). Sensitivity test of ± 1 pass. Relaxation: (3 pass) Insensitive. This requirement was not a limiting factor in the base case. Increase: (5 pass) Short term insensitive. Reduction to LTHL begins 4 decades earlier than base case. LTHL 1.5% higher than base case due to stands having to be harvested at slightly older ages which are closer to culmination age. *Visual Quality & Riparian Zones*: 12% of THLB. Base case requirement of at most 6% (retention VQO), 18% (partial retention VQO) and 28% (modification VQO) to be < 5 m tall. Sensitivity test of ± 10%. Insensitive in short term to either. Relaxation: (+10%) Slightly sensitive mid and long term. Initial harvest levels maintained one decade longer than base case. LTHL 1% higher. Increase: (-10%) Moderately sensitive – Falldown begins 2 decades earlier than base case. LTHL reduced 2%. *Green-up*: Green up ages 14 yrs for 3 m (non-VQ) and 20 - 21 yrs for 5 m (VQ). Sensitivity test of ± 5 years (equivalent to more than a 1 m change in green-up hts). Short term insensitive. Relaxation: (- 5 yrs) Insensitive. LTHL 1% higher. Increase: (+ 5 yrs) **Very sensitive mid term** - initial harvest level can only be maintained for 3 decades (6 less than in the base case). LTHL 2% higher than base case as the extended age at which stands are harvested are closer to culmination ages.
♦ Backlog NSR	5 300 ha of backlog NSR. Time frame in which this is restocked is not given. Assume restocking to be already incorporated in analysis.
♦ Quality	• 44 922 ha of non-merchantable forest types deducted from THLB (all deciduous, Douglas-fir, cedar, hemlock, white pine and yellow pine; all spruce leading mixed with fir and hemlock; lodgepole pine leading with fir mix). This is equivalent to 8% of the THLB. • 175 760 ha of low productivity sites deducted from THLB (balsam with SI < 10 m, spruce with SI < 10.5 m, and lodgepole pine with SI < 12 m). This is equivalent to 30% of the THLB. Industry contends 26 000 ha of low productivity stands near the margin and 25 000 ha of low productivity immature stands should not have been deducted. This constitutes almost 9% of the THLB. Sensitivity analysis indicates the current harvest level can be maintained for 390 years were the THLB increased 15% (presumably based on average sites), indicating considerable long term potential.

◆ Older Forests	Base case does not include a requirement for old growth or biodiversity as there were no specific provisions applied operationally in the TSA at the time of analysis. Relaxation: N/A Increase: (10% of stands of age ≥ 140 yrs). Has a similar effect to decreasing the land base. Current harvest levels can only be maintained for 40 years, 50 less than the base case, and LTHL reduced 9% below base case.
◆ Min. Harvest Ages	Age at which balsam stands attain 200 m3/ha (100 to 150 yrs for existing stands and 70 to 120 yrs for regenerated stands), and spruce (90 to 110 yrs for existing stands and 60 to 90 yrs for regenerated stands) and lodgepole pine (60 to 80 years for existing stands and 50 to 60 years for regenerated stands) stands attain 150 m3/ha. 71% of THLB above the minimum harvest age. Sensitivity analyses of ± 20 yrs. Decrease: (-20 years) Insensitive. Most stands are harvested in the base case at ages higher than minimums. Thus lowering further has no effect. Increase: (+20 years) Short term insensitive **Mid-term drop commences 5 decades sooner than base case.** LTHL 2% higher than base case as increasing minimum ages results in stands being harvested closer to their culmination age (analysis, 28). (An increase of 30 years would make min ages older than culmination, resulting in a lower LTHL [analysis, 28])
◆ Silvicultural Systems	Most of the THLB is currently managed under a clearcut harvesting system. Some clearcut with reserves and patch cuts. All harvested areas are planted.
◆ Estimates of Timber Volumes	VDYP used for existing stands > 20 years of age. TIPSY used for regenerated stand volumes and existing stands ≤ 20 years of age. *Existing stand volumes*: Some concern regarding older stand volumes being over-estimated, although a comparison between actual harvest volumes and VDYP volumes effectively shows no difference. Sensitivity test for ± 20% in volume. Long term insensitive. Increase: (+20%) Moderately sensitive in mid term only. Current harvest level can be maintained for 160 years (7 decades longer than base case), before falling to base case LTHL. Decrease: (-20%) **Highly sensitive**. Current harvest level only maintained for 1st decade after which harvest levels decline to the same LTHL as in the base case, which is reached 8 decades earlier. *Regenerated stand volumes*: Sensitivity tests for ± 20% in volume. Short term insensitive to either. **Highly sensitive to both in long term**. Increase: (+20%) Current harvest level maintained for at least 250 years. Ultimate LTHL (beyond 250 yrs) 21% higher than base case. Decrease: (-20%) LTHL 17% lower than base case. Transition to LTHL commences 4 decades earlier than the base case.
◆ Site Productivity	**This TSA was the only management unit in which site index adjustments were fully incorporated into the timber supply analysis during the first TSR.** Alone, this results in an 18% increase in LTHL. When combined with managed stand yield curves (from TIPSY), it results in a 42% increase above unmanaged (existing) stand yields (using VDYP). (rationale, 20).
◆ Regen Delay	All harvested areas are planted. Base case regen delays of 4 yrs. Sensitivity test of ± 2 years. Affects both the green-up period (especially in VQO zones) and volumes at harvest. Increase: (+2 yrs) Mid term reduction in harvest levels commences 2 decades

	earlier than in base case. LTHL 2% below base case. Decrease: (-2 yrs) Insensitive short and mid terms. **Very sensitive in long term.** LTHL 4% higher than base case.
◆ Forest Health	Pests such as the Mountain Pine Beetle, Spruce Bark Beetle, and Western Balsam Bark Beetle are present on some mature stands in the TSA

Summary of TSR Issues by Period

Short Term (1 to 20 years)

The abundance of mature timber and the relatively good operating area of the TSA result in a very stable short term timber supply. Under most scenarios, the current harvest level can be maintained for at least 50 years. The only factor that could possibly result in a lower short term harvest level, and even then only beginning in the second decade, is if existing stand volumes were overestimated by 20%. This is an unlikely scenario, however.

Mid Term (21 to 140 years)

The mid term timber supply is a generally-smooth transition over a span of 5 decades from the current harvest level to the long term harvest level. No sensitivity analysis scenario resulted in a mid term shortfall below the LTHL. Sensitivity tests generally indicated an earlier or later commencement of the mid term. As in the short term, the mid term is highly impacted where existing stand volumes are overestimated. It is also sensitive to factors that, in effect, result in reducing the amount of older timber available, such as the institution of a 10% older forest requirement or a 15% reduction in the land base. A 20% reduction in regenerated stand volumes brings on an earlier commencement of harvest reductions due to the need to stretch existing stands over a longer period. A five year increase in green-up ages brings on the transition to lower long term harvest levels 6 decades earlier than the base case so that it begins after 3 decades.

On the positive impact side, a 20% increase in existing stand volumes (unlikely as a measurement phenomenon, but some increase possible through management) allows current harvest levels to be maintained for 160 years. A 20% increase would enable the current harvest level to be maintained almost indefinitely.

Long Term (141 + years)

As is the case in virtually all management units, the long term is sensitive to changes in regenerated stand volumes. A 20% increase or decrease in regenerated volumes results in a respective 21% increase or 17% decrease to LTHL. A 20% increase would enable the current harvest level to be maintained almost indefinitely.

The long term is also sensitive to increasing harvests in or rehabilitating forests considered non-merchantable or on low productivity sites. Together, this amounts to an area which is equivalent to 38% of the THLB. This would effectively amount to increasing the THLB. Based on the average of all sites, a 15% increase in the THLB would allow the current harvest level to be maintained almost indefinitely.

A 2 year reduction in regeneration delay (from 6 years down to 4) results in a significant 4% increase in LTHL.

Issues Highlighted

The Morice TSA has a strong timber supply situation. Likely, timber supply and quality in the Morice TSA would respond well to a pro-active incremental silviculture program. The nature of the Morice TSA therefore makes it a potential candidate for an increase in AAC that is sustainable for a relatively long period. To confirm this assumption, detailed forest level analyses are needed (Level 2 silviculture analysis).

Individual Issue Analysis identified from the Type 1 Silviculture Strategy

This section summarizes the critical issues that guided the TSA silviculture strategy in January 2000. While many issues were discussed during the development of this strategy, the participants (Industry, MELP and MoF representatives) agreed to address the following key issues:

- Backlog NSR and impeded areas
- Employment
- Habitat
- Potential to increase the THLB
- Lower timber quality expected in regenerated stands

Due to the nature of some issues listed above, it was determined that certain aspects of these issues would be better addressed outside of this RMP. The table below describes the issues addressed as part of the SH component. Please refer to the Morice TSA Silviculture Strategy (Type 1) for further details.

Critical Issues pertinent to the SH component

Issues	Strategies
1 Backlog Areas	
1.1 NSR areas	
Some backlog sites on the timber harvesting land base remain untreated. Sites left with inadequate stocking levels will probably not reach the projected yields used in the timber supply analysis	Restock all treatable backlog NSR over a five-year planning period. Survey the entire area in the first year, site prepare as required (20% of treatable area per year), plant, and brush as required
2 Impeded areas	
Ensure previous investment are protected and achieve free growing status	Survey impeded backlog stands and brush as required
3 Habitat	
3.1 Old seral stands	
There is a perceived shift to less old seral species and more “created” early seral and mid-seral area	Create mature and old seral characteristics in mid-seral stands by accelerating the production of certain attributes (variety of stem sizes, coarse woody debris, species diversity, and large-diameter stems) in areas with high site productivity in plantations and large burns. Identify candidate pilot study areas and prepare prescriptions that specifically address landscape unit requirements. Space or commercial thin, fertilize and prune as required to create required attributes.
4 Stand-level biodiversity	
In stands harvested before the inception of the Forest Practices Code in 1995, wildlife tree patches and riparian areas should be managed for their desired characteristics rather than for timber production	Identify and establish stand-level retention area candidates (future WTPs and riparian areas) and goals in stands regenerating after logging or wildfire. Manage for habitat values rather than crop tree objectives
5 Timber Quality	
Lower timber quality is expected in regenerated stands than in first-growth stands. Management in the Morice TSA should provide for a wide range of forest products, including high quality grades.	On lodgepole pine stands with high site index, produce 5m clear logs with minimum 30 cm diameter as 10% of the volume by planting improved stock at a density to be determined, spacing to 900 sph at 5.5 m top height then pruning to 3.3 m, pruning again to 5.5 m when the top height is 8 m, and fertilizing every 15 years beginning three years after pruning
	On good and medium pine stands, large logs with minimum 30 cm diameter as 10% of the volume by spacing to 1000-1800 sph and fertilizing every 15 years beginning three years after spacing

2.4.3 Opportunities to Increase Timber Supply

Although the Chief Forester considered and rejected the possibility of increasing the AAC, increasing harvest levels above the current level could be considered as a possibility under a silviculture strategy. If a provincial strategy is to maintain current harvest levels then the short term timber supply in some TSAs must go up in order to compensate for those TSAs where little or nothing can be done to prevent a drop. The nature of the Morice TSA (robust timber supply situation) makes it a potential candidate for an increased AAC that is sustainable for a relatively long period.

A potential strategy to accomplish an increase in harvest levels could be to induce an allowable cut effect by increasing long term harvest levels and shifting some of the benefit into increased short term harvests. This would have the added benefit of reducing the risk of losses from fire, pests and decay in the large stock of existing mature timber. Strategies to increase long term harvests include increasing regenerated stand volumes and increasing the timber harvesting land base through rehabilitation of non-merchantable stands and increasing site productivity of some treatable low-site stands. Site rehabilitation and treatment on low productivity stands seems however an unlikely scenario due to the limited information we currently have on these sites.

Potential Strategies by Response Time Frame

Response Time Frame	Objective/Action	Anticipated Result
◆ Short Term	1. Fertilize suitable thrifty immature stands 10 to 15 years prior to planned harvest. 2. Maintain or improve health of THLB while reducing losses caused by the various damaging agents. Ensure damaging agents do not impede silviculture obligations or investments and protect timber resource.	A forest level analysis (type 2) will be required to fully assess the potential benefit of a fertilization program. Current literature indicates a gain of 12 m^3/ha from a single fertilization (N and S) applied at the age of 25 years.
	3. See long term.	Mitigate effect of pests on timber supply and quality.
◆ Mid Term	1. See long term.	Smooth transition to lower LTHL.
◆ Long Term	1. Increase regenerated stand volumes 20% by: • reducing regen delay from 4 yrs to 2 or less years by planting immediately following harvesting; • planting large, genetically improved stock; • spacing and multiple fertilization of suitable stands; • managing voids so that TIPSY OAF1 does not exceed 10%.	A forest level analysis (type I) will be required to fully assess the potential benefit on timber supply
	2. Increase the THLB by 15% by rehabilitating a portion of: • non-merchantable forest stands; • low productivity forest stands.	Option 2 is unlikely with current information available.
	3. Commercial Thinning/fertilization	

Potential Treatments and Analysis Results

Treatment	Treatable Area	Comment
◆ Fertilization	The Morice TSA currently has approximately 12,000 ha of unmanaged Age class 3&4 and approx 7,200 ha of age class 1&2 spaced stands. The majority of these areas could be immediate candidate for multiple fertilization. In addition, there is approximately 4,700 ha of identified age class 1 & 2 candidate stands for spacing.	54% of THLB is Pl, a species which responds to fertilization. Over 25% of THLB is in thrifty immature age classes and may be candidates.
◆ Spacing	Approx. 4,700 ha of identified age class 1 & 2 candidate stands for spacing. Approx. 2,200 ha currently under prescription.	Benefit from spacing will come from making stands available for commercial thinning and by creating the right conditions for fertilization treatments. Follow up treatments to spacing are necessary to ensure potential timber supply increase and financial return.
◆ Commercial Thinning	Unmanaged age class 1 & 2 can be set up for CT candidate through pre-commercial thinning treatment. 12,000 ha of unmanaged age class 3&4 leading Lodgepole pine stands could be candidate for CT. 11% of THLB aged 61 to 80 years and may be candidates. Approx. 5,500 ha of identified age class 1&2 stands could be set up for CT. Approx. 2,200 ha currently under prescription.	Specific regimes would need to be determined through detailed forest level analyses (Type 2).
◆ Rehabilitation		Equivalent of 38% of THLB deducted as non-merch or low productivity. Current information indicates low potential for treatment.
◆ Backlog NSR	TSR 1 assumed that all NSR to be restocked. The current data indicate 5,592 ha of NSR of which approx 2,022 ha can be restocked. Fill planting on marginally stocked stands will help reduce OAF 1 to less than 10%.	All areas were assumed rehabilitated in the timber supply analysis (TSR I). NSR backlog planting will act as maintaining the current AAC rather than increasing the long term harvest.

Working Targets

Maintenance activities (backlog reforestation)

Ensure basic legal obligations and plantation maintenance activities are addressed as the **highest priority**.

Working Target 1:

Maintain the LTHL by ensuring that previous plantations are protected and regenerated stand volume is not compromised.

Strategies to meet Working Target 1:

A. Conduct an *accelerated* stocking/free growing assessment to maintain up to date information on land status and brushing treatment needs. Attempt to prepare a treatment prescription in accordance with Ministry Policy immediately after the survey season for every site proposed for brushing treatment.

B. Conduct brushing treatments on high risk stands to ensure that existing plantations remain Satisfactorily Restocked (SR) and achieve free growing status by the year 2010.

C. When possible and economically viable, implement stand improvement treatments (brushing treatment) that will increase the number of free growing stems on marginally free growing stands to produce higher volume stands.

Working Target 2:

Increase productive area by rehabilitation and reforestation of sites currently classified as **NSR** to maintain the LTHL.

Strategies to meet Working Target 2:

A. Conduct an *accelerated* stocking assessment program to maintain up to date information on land status and site preparation and planting treatment needs. Attempt to prepare a backlog SP or a planting prescription immediately after the survey season for every site proposed for planting or fill planting.

B. For Backlog areas disturbed between January 1, 1982, to September 30, 1987, establish baseline information upon which to rank areas for treatment, and to develop Backlog Silviculture Prescriptions. Where economically viable, complete all site preparation and planting on **Good, Medium, and Poor** sites by the year 2002.

C. For Backlog areas disturbed before January 1, 1982, identify **Good and Medium** sites first, then Poor and Low sites, and confirm that indicated site productivity is correct. Establish baseline information upon which to rank areas for treatment and to develop Backlog Silviculture Prescriptions. Where economically viable, complete all site preparation and planting on **Good and Medium** sites by the year 2002.

   The following areas should **NOT** be scheduled for planting:

   C.1. Areas where the average age of well-spaced stems is less than 12 years and stocking exceeds existing minimums for the ecosystem association (Reference: *Establishment to Free Growing Guidebook*).

   C.2. Areas where the average age of well-spaced stems is 12 years or greater and the number of well-spaced stems is 60% of the Guidebook minimum's. This is a guideline only. Each block should be individually considered before applying this reduced stocking standard.

C.3. Areas coded as inoperable or environmentally sensitive.

D. Use 'A' class seed or better and large planting stock in order to increase regeneration stand volume and minimize future brushing treatment.

E. Do not reforest if the cumulative cost of all brushing treatments is estimated to exceed $1500 per hectare.

2.4.4 Opportunities to Improve Timber Quality

The effects of incremental silviculture on the future quality of the timber resource were not analyzed in the last timber supply review. Premium logs will be available in the short and mid terms due to the large proportion of old forest in the Morice TSA. The future decrease in log quality was identified as a critical issue in the *Type 1 Silviculture Strategy* (2000). Interim timber quality objectives have been identified to provide direction for the development of density management prescriptions. Detailed density regimes and outputs analysis will need to be developed in more detailed silviculture planning exercises (IFPA, Type 2 analysis).

A general objective for the District is to maintain the amount of quality timber available by implementing the treatments listed in the following table.

Potential Strategies by Response Time Frame

Response Time Frame	Strategy/Action	Anticipated Result
◆ Short Term	None	
◆ Mid Term	Space/Prune 100 ha/year of up to 5 m log until funding becomes available to reach 500-600 ha per year to meet provincial objectives. Space and multiple fertilize to produce large diameter logs. Manage for clear timber through long rotation	
◆ Long Term	As above	

Working Targets

Incremental activities

Working Target 3:

Carry out a wide range of silviculture treatments that will provide a *diversified portfolio of forest products and conditions* in order to minimize risk and better respond to future market conditions. Ensure the development of regimes that will increase the regenerated stand volumes to minimize the *mid term*[1] *provincial shortfall* and attempt to maintain the current AAC as the LTHL in the Morice TSA. Attempt to increase the overall log quality.

Strategies to meet Working Target 3:

A. Develop a series of density management regimes to ensure a wide range of densities, forest conditions and habitats are maintained over the landscape. These regimes may include juvenile spacing, fertilization, pruning, commercial thinning and no-treatment options. Until such specific regimes are developed, the *interim strategy* is to produce stand density management prescriptions that will maximize piece size without compromising the total volume production and that will leave opportunities for fertilization and commercial thinning.

B. Implement various regimes of density control that will maximize MAI, volume and piece size in age class 1 & 2 stands.

C. Set up stands for commercial thinning using density control treatments in order to provide interim harvest without reducing the potential of the residual stand.

D. Implement a fertilization program targeting previously spaced age class 3 & 4 pine stands and thrifty immature untreated pine stands with favorable live crown size and vigor and also fertilizing younger stands with room for crown expansion.

E. When biologically and economically feasible, treat suppressed age class 3 & 4 pine stands classified as low productivity sites. Treatment options should include spacing, mechanical spacing with salvage or site rehabilitation.

F. Investigate options for rehabilitation of non-merchantable forest stands.

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[1] The mid term timber supply is a generally-smooth transition over a span of 5 decades from the current harvest level to the long term harvest level. The mid term is characterized by a decline in AAC at a rate of 4%/decade to a long term harvest level in 140 years of 1 614 000 m3, 19% lower than the initial level.

2.4.5 Morice Forest District Sustainable Harvest Data

2.4.5.1 Enhanced Forestry Table

Activities	Treatment Area Goals (ha)					Plan 2001/02	
Stand Tending	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	0	0	0	0	0	0.00	0
Spacing	800	800	800	500	500	600.00	480000
Pruning	300	300	300	300	300	750.00	225000
Fertilizing	800	800	800	1200	1200	300.00	240000
Other	0	0	0	0	0	0.00	0
Totals hectares	1900	1900	1900	2000	2000	497.37	945,000
Planning and prescriptions							30,000
Total dollars							975,000

Forest Health Enhancement

Spacing	0	0	0	0	0	0.00	0
Pruning	0	0	0	0	0	0.00	0
Other treatments	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0

Habitat Supply and Biodiversity Enhancement

Treatments	0	0	0	0	0	0.00	0

Domestic Range

Treatments	0	0	0	0	0	0.00	0

Enhanced Forestry Activities - Management Unit Total

Surveys	0	0	0	0	0	0.00	0
Spacing	800	800	800	500	500	600.00	480,000
Pruning	300	300	300	300	300	750.00	225,000
Fertilizing	800	800	800	1,200	1,200	300.00	240,000
Other stand tending activities	0	0	0	0	0	0.00	0
Totals hectares	1900	1900	1900	2000	2000	497.37	945,000
Planning and prescriptions							30,000
Studies funding							51,840
Total dollars							1,026,840

2.4.5.2 Backlog Program Table

Activities	**Treatment Area Goals (ha)**					**Plan 2001/02**	
Legal Obligations	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	0	0	0	0	0	0.00	0
Site preparation	0	0	0	0	0	0.00	0
Planting	0	0	0	0	0	0.00	0
Brushing	0	0	0	0	0	0.00	0
Max. density spacing	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Seed purchase	0	0	0	0	0	0.00	0
Total legal obligations							0
Backlog Reforestation							
Surveys	3000	0	0	0	0	30.00	90000
Site preparation	100	100	100	100	100	1,200.00	120000
Planting	300	300	300	300	300	1,040.00	312000
Brushing	0	0	0	0	0	0.00	0
Totals hectares	3400	400	400	400	400	153.53	522,000
Seed purchase	300	0	0	0	0	448.00	134,400
Prescriptions and planning dollars							0
Total backlog reforestation							656,400
Impeded areas							
Surveys	5000	7000	7000	7000	7000	30.00	150000
Brushing	350	350	350	350	350	550.00	192500
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	5350	7350	7350	7350	7350	64.02	342,500
Prescriptions and planning dollars							30,000
Total impeded areas							372,500
Site Restoration							
Fill planting	0	0	0	0	0	0.00	0
Rehabilitation	0	0	0	0	0	0.00	0
Reforestation	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning dollars							0
Total site restoration							0
Backlog Program Activities - Management Unit Total							
Surveys	8000	7000	7000	7000	7000	30.00	240000
Site preparation	100	100	100	100	100	1,199.98	120000
Planting	300	300	300	300	300	1,039.99	312000
Brushing	350	350	350	350	350	550.00	192500
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	8750	7750	7750	7750	7750	98.80	864500
Seed purchase	300	0	0	0	0	448.00	134400
Prescriptions and planning							30,000
Recommended studies							0
Total backlog program							1,028,900

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

2.4.5.3 Performance Measures Based on Activities Planned for 2001/2002

	Performance Measure	Tree Improvement	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A	**Planned treatment area (ha) in 2001/2002**	300	300	2,640	100	300	350	800	300	800	5,890	
1.0	**Timber Supply**											
1.1	Potential volume/ha gain (m3/ha/yr)	0.34	0	0.25	0	1.9	0.25	0	0	0.40		
1.2	Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3	Pot. tot. merch. vol. increment in 65 yrs (m3)	6,630	0	42,900	0	37,050	5,688	0	0	20,800		113,068
1.4	Est. yrs reduced to achieve mngt objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4	Est. area that will be reclass. as stocked (ha)			1,500								1,500
1.5	Est. area declared as free growing (ha)			3,750								3,750
2.0	**Wood Value**											
2.1	Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0	**Employment**											
3.1	Estimated short term employment (person days/ha)	0.1	0.34	0.07	1	1	2	3.96	6	0.18	0.1	
3.2	Estimated total employment (person days/year)	30	102	177	95	300	700	3,168	1,800	144	589	
3.3	Estimated total full time equivalent positions (FTE)	0	1	1	1	2	4	18	10	1	3	39
4.1	**Forest Health Enhancement (ha)**											0
5.1	**Habitat Supply**											
5.2	Planned area for specific wildlife forage or habitat creation in 2001/2002 (ha)											0
5.3	Est. area with secondary value provided to biodiversity (ha)											0

2.4.5.4 Studies Table

A Study quantifying, assessing and rehabilitating non-productive roads and landings was initiated under Babine Forest Products EFMPP and Houston Forest Products. Should this project continue to be funded, the estimated budget is as follows:

2001/02	$51,840
2002/03	$153,440
2003/04	$153,440
2004/05	$149,500
2005/06	$124,000

2.4.5.5 Morice Forest District Summary Table

Woodlot information is not included in this section.

	Treatment Area Goals (ha)					Plan 2001/02	
	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	1,900	1,900	1,900	2,000	2,000	497	945,000
Planning, prescriptions and seedlings							81,840
Backlog Program Field Activities	8,750	7,750	7,750	7,750	7,750	99	864,500
Planning, prescriptions and seedlings							164,400
Totals	10,650	9,650	9,650	9,750	9,750		2,055,740

Performance Measures	
Potential total merchentable volume increment in 65 years	113,068 m^3
Estimated ha that will be reclassified as stocked	1,500 ha
Estimated ha that will be declared as free growing	3,750 ha
Estimated total full time equivalent positions generated	39 FTEs
Forest health enhancement area	0 ha
Planned area for specific wildlife forage or habitat creation	0 ha
Estimated area with secondary value provided to biodiversity	0 ha

2.4.5.6 Woodlot Program Table

The woodlot program for the Morice Forest District is based on information gathered from surveys which were conducted in 2000.

	Treatment Area Goals (ha)					Plan 2001/02	
	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	10	0	0	0	0	1,000	10,000
Planning, prescriptions and seedlings							0
Backlog Program Field Activities	920	0	0	0	0	250	230,000
Planning, prescriptions and seedlings							15,000
Totals	930	0	0	0	0		255,000

2.5 *Bulkley-Cassiar Forest District*

2.5.1 Basic Data

The Bulkley-Cassiar Forest District includes the Bulkley TSA and the Cassiar TSA. Basic data follows.

Land Area

	Bulkley TSA*		Cassiar TSA**	
Description	Area (ha)	Area (%)	Area (ha)	Area (%)
Total Area of TSA	736,000	100	13,413,249	100
Total Productive Crown Forest	479,400	65	3,667,434	27
Net Timber Harvest Land Base (THLB)	277,700*	35	393,755	3

Source:
*1995 TSR analysis report. Note: approx. 20% smaller than in previous analysis
** 1994 TSR analysis report.

Annual Allowable Cut (AAC)

AAC Type	Conventional (m^3)	Deciduous (m^3)	Insect/Disease (m^3)	Marginal (m^3)	Total	Woodlot AAC
Bulkley TSA (pre-TSR1)	895,000			0	895,000	n/a
Bulkley TSA (TSR1)	528,000			367,000	895,000	13,000
Change (%)	-41.0			∞	0	∞
Cassiar TSA (pre-TSR1)	140,000				140,000	n/a
Cassiar TSA (TSR1)	400,000 (only 135,000 apportioned)				400,000	n/a
Change (%)	+186%				+186%	

Bulkley TSA

According to the Bulkley Land and Resource Management Plan (1998), the AAC is allocated as follows: 48.5% between Skeena Cellulose and Pacific Inland Resources (PIR), 21.0% to the Small Business Forest Enterprise Program (SBFEP) and 27.4% to temporary licences.

Under current management assumptions, the first Timber Supply Review (TSR 1) indicates that the current harvest level of 895,000 cubic metres per year can be maintained for another 20 years without causing a sharp drop in future harvest levels below the long-term level. Beginning 20 years from now, the harvests must decrease 9% per decade until the long-term harvest level of 424,000 cubic metres per year is reached, 90 years from now.

Cassiar TSA

With reference to an August 7, 1997 Minister of Forests News Release, the Cassiar AAC is apportioned as follows: 58.4% to non-replaceable forest licenses, 29.6% to the value-added SBFEP, 1.9% to the SBFEP, and 10.1% to Forest Service Reserve (i.e. unallocated).

Given the management assumptions of the time, the 1994 Timber Supply Analysis indicated that a harvest level of 842,400 cubic metres per year could be maintained for 70 years before increasing to a long term harvest level of 867,400 m3. Based on those assumptions, the currently apportioned AAC volume of 135,000 m3 can be maintained indefinitely.

Site Class Profile

	Classes* (%THLB)		
	poor	medium	good
Bulkley TSA	16%	62%	22%
Cassiar TSA			

*Based on Bulkley TSA Timber Supply Analysis Bulkley-Cassiar Forest District Review (1999)

Age Class

Bulkley TSA*		Cassiar TSA**	
Age Class	(%)	Age Class	(%)
NSR	0.5	NSR	7
0	2	0	0.1
1-20	10	1-20	20
21-40	4	21-40	7
41-140	21.5	41-140	30
141-250	39	141-250	25
250+	24	250+	12
Total	100	Total	100

*Based on Timber Harvesting Land Base reported in Bulkley TSR2 dataset,
** Extrapolated from 1994 Cassiar Timber Supply Analysis

In the Bulkley TSA, approximately half the forest area is over 200 years old, consisting of slow-growing, high-volume stands. The other half is reasonably well-distributed across the younger age classes (Bulkley LRMP, 1998).

In the Cassiar TSA, coastal forests are comprised primarily of high-volume slow growing older stands, while interior forests tend to be comprised of younger age classes. This trend is linked to fire history characteristics of coastal versus interior biogeoclimatic zones.

Tree Species Profile

The species composition (by volume) of the Bulkley TSA Timber Harvesting Land Base is 26% spruce, 18% lodgepole pine , 45% balsam and 10% hemlock. For the Cassiar TSA, species composition is 21% spruce, 13% balsam, 37% hemlock, and 29% pine.

Incremental Silviculture History

Incremental Silviculture in the Bulkley TSA first occurred in 1981, but it was not until 1991, that it began in earnest. Over the past 8 years, an average of 400 hectares per year of juvenile spacing and 100 hectares per year of pruning has been done in the TSA, mostly on young Pine stands.

2.5.2 Issues

The following section addresses proposed activities in Bulkley TSA. Silviculture priorities and strategies are still being developed for Cassiar TSA.

Plans and policies applicable to Bulkley TSA include the Bulkley LRMP, Bulkley Resource Management Zone Higher Level Plan Objectives, the Bulkley Landscape Unit Plan Biodiversity Objectives, the Bulkley Landscape Unit Objectives, the Bulkley Silviculture Strategy, and the Draft Bulkley Forest Health Strategy. They have been reviewed for commitments, recommendations and opportunities that will address issues and investment needs that are applicable to this RMP for the land based programs.

Presently, there are 16 woodlot licences issued in the Bulkley TSA. The woodlot AAC contribution is 13,000 cubic metres per year. Woodlot licensees have basic obligations until "Free Growing". Their silvicultural priorities are similar to District priorities since many of the District issues also affect woodlot licensees. The following summary of management issues for the Bulkley TSA are from the recently completed Incremental Silviculture Strategy (2000).

Individual Issue Analysis

Harvest Forecast	**Significant falldown of 53%.** The present AAC of 895 000 m^3/yr can be maintained for 2 decades, falling thereafter by 9%/decade to a LTHL of 424,000 m^3/yr 90 years from now. The present TSA total growing stock volume of 65 million m^3 declines over a 90-year period to a long term level of approx. 30 million m^3. Thereafter, growth matches the harvest rate. (analysis, 16)
Backlog NSR	296 ha backlog NSR considered inoperable. 865 ha of operable NSR assumed to be restocked within 5 years.
Quality	Approximately 88 100 ha of non-merchantable forest (low site, deciduous, small trees on poor sites, poor stocking) completely removed from the THLB. These are not addressed further in analysis or rationale. The IRM zone is subdivided into 5 quality classes: spruce sawlog, pine sawlog, balsam sawlog (taller one-third of balsam stands), balsam marginal, and hemlock pulplog. A harvest forecast from the sawlog-only landbase indicates an initial harvest level of 598 000 m^3/yr (8% below the currently licensed harvest of 650 000, excluding temporary licences), falling to a LTHL of 296 000 m^3/yr (54% below current licences and 30% below base case). (analysis, 20) Recent actual consumption of marginal sawlog and pulplog stands amounts to 13% of the harvested volume, vs. 39% of the available inventory and 53% of the harvest in the timber supply forecast. (analysis, 21) Chief forester creates partitioned AAC of

	367 000 m^3 for marginal sawlog and pulplog stands to ensure harvest profile is consistent with the inventory profile (rationale, 23).
Timber Supply	Maintain or enhance the long-term security of timber supply.
Enhanced Timber Development (ETD) Area	Intensively manage the timber resource.
Older Forests	No base case requirement for the IRM zone. Riparian and VQO & Riparian require at least 70% to be 80+ years; community forest requires 40% to be 100+ years; Babine and Grizzly require 30% and 50% respectively to be 140+ years. Sensitivity tests ± 10% of area and ± 10 of age. Relaxation: (-10% area) Insensitive. Increase: (+10% area) Insensitive in short term. Slight sensitivity mid and long term. Mid term harvests decline more rapidly than base case to a LTHL 2.5% lower than base case. Relaxation: (-10 years) Insensitive. Increase: (+10 years) Insensitive in short and mid term. LTHL 1% lower than base case.
Min. Harvest Ages	Age at which stands reach specified minimum diameter (typically 25-29 cm) and volume (typically 150 - 200 m3/ha) requirements. Ages range from 67 yrs on good balsam sawlog sites to 161 years on marginal sawlog sites. Average age about 95 yrs (analysis, 12). Sensitivity test ± 20 years, which is approx. equivalent to varying min vol requirements by 50 m3/ha and avg. dia by 2 cm. Given the magnitude of the age change (± 20 years on many min ages which are 70 - 120 yrs, except those for marginal stands which are often near 160 yrs), the response to changes is relatively minor. Decrease: (-20 years) Initial harvest rate extended 2 decades longer than the base case (from 2 to 4). Mid term harvests decline more rapidly than base case to a LTHL 5% lower than base case. The lower LTHL is due to harvesting many existing stands below their culmination age. Harvest ages would ultimately recover to near culmination in future rotations of managed stands but this is beyond the planning horizon. (analysis, 25) Increase: (+20 years) Falldown commences after the 1st decade. Harvest levels drop at a faster rate than the base case, reaching a 1% lower LTHL 2 decades earlier than base case (70 yrs vs 90 yrs).
Silvicultural Systems	Clearcutting assumed in base case. Some areas are planned using alternative systems such as patch retention, wildlife tree retention, single tree selection and overstory removal. In most cases the remaining trees will contribute to the next crop. (rationale, 15)
Estimates of Timber Volumes	VDYP used for existing and regenerated stands. Regenerated stand volumes increased 5% on the basis of assumed fuller stocking. *Existing stand volumes*: District staff feel volume estimates are close to actual. (Since the analysis, an inventory audit has found no statistical difference between audit volume and inventory volume estimates.) Sensitivity test ± 10%. Long term insensitive. Increase: (+10%) Moderately sensitive, maintaining the initial harvest level 2 decades longer. Decrease: (-10%) **Very sensitive**, decreasing the initial harvest level 11% below the

	base case. *Regenerated stand volumes*: District staff feel growing potential considerably greater than indicated. Sensitivity tests for ± 25% in volume. Insensitive over first 80 years. Increase: **Long term harvest levels 26% above base**. Mid term shortfall of 490 000 m3 occurs in decades 9 through 14. Decrease: (-25%) Mid term transition to LTHL continues for 3 decades longer than base case arriving at a LTHL 28% below base case after 12 decades.
Regenera-tion Delay	All areas are planted within 1-2 years. A regeneration delay of 4 years was used in the base case analysis. Sensitivity tests of decreasing regen delay to 0 and increasing it to 10 years. Short and mid terms insensitive to either. Increase: (to 10 years) Moderately sensitive in LTHL (reduced 5% below base case). Decrease: (to 0 years) Moderately sensitive. LTHL increased 6% above base case. Decreasing regen delay also reduces green-up times but harvest flow is not sensitive to a reduction in green-up time (analysis, 31).
Landscape Corridors	Protect and enhance biodiversity and wildlife habitat, protect forest health and maintain 70% of forests' structure and function.
Biodiversity	Maintain the natural composition of conifers and deciduous species across the landscape unit through time (short, mid and long terms).
Grizzly Bear Habitat	Avoid human-bear conflicts and maintain high value grizzly bear habitat.
Forest Health	Maintain health and productivity of the timber resource.

Summary of TSR Issues by Period

Short Term (1 to 20 years)

The most significant issue in the short term is the harvest profile not matching the inventory profile. This is a timber management issue rather than a silviculture issue and was addressed by the chief forester creating a partitioned AAC for marginal stands.

The short term is very sensitive to an increase in forest cover constraints to a 5-pass system in the IRM zone. However, such an increase does not appear likely. The short term is also sensitive to a 10% decrease in existing stand volumes. However, this does not appear to be the case, as an inventory audit has found no statistical difference between audit and inventory volume estimates.

Other than the above, the short term does not exhibit any significant sensitivities. There is little opportunity for incremental silvicultural practices to increase short term harvests.

Mid Term (21 to 140 years)

The steady decline in harvest levels over the mid term is largely a classic falldown response, i.e. existing forests have large standing volumes that are replaced by regenerated stands having smaller trees. The TSA total growing stock volume falls over a 90-year period from 65 to 30 million cubic metres as the forest is transformed from approximately half of the THLB being in forests over

200 years old to only 7%. Average harvested volume/ha declines from approx. 325 m3 from existing stands to a long term average of 200 - 250 m3 from planted stands (analysis, 18).

The steady decline is largely insensitive to constraints, varying only slightly in aspects such as the steepness of the decline and the timing of its onset or conclusion.

Long Term (141+ years)

The base case long term harvest level is 53% below the pre-TSR AAC. This partially results from the THLB being approximately 20% less than that of the previous timber supply analysis (due to a variety of factors including differences in the criteria used to define inoperable areas (rationale, 14)).

The picture may not be as bleak as first appears, however, as (rationale, 10-12):

- district staff believe site productivity to be underestimated by as much as 25%;
- experience elsewhere has shown that were TIPSY yield curves used for managed stands (vs. VDYP), the LTHL could have been 20-25% higher than the base case;
- increasing regenerated stand volumes through incremental silviculture practices may further increase the yield response;
- reducing regeneration delay from the 4 years used in the analysis to 0 results in a 6% increase in the LTHL; and
- the 88,100 ha of non-merchantable forest deducted from the THLB may at some time in the future present an opportunity to expand the THLB.

The AAC rationale mentions a sensitivity analysis in which regenerated volumes were increased 50% from the base case (25% from TIPSY, 25% from higher site productivity) but does not report the results other than that these did not affect the short term harvest level.

The long term is largely insensitive to changes in forest cover requirements, presenting little opportunity for incremental silviculture to directly or indirectly ease constraints and raise harvest levels. The LTHL rises only 4% if all forest cover constraints, including older forest requirements, are removed (analysis, 32).

In conclusion, there is a significant probability the LTHL will increase in the future due to active as well as passive opportunities to increase the LTHL. While it is highly unlikely that it would ever approach the current harvest levels, it may be possible to raise it to 650,000 cubic metres, the level of AAC without the 245,000 cubic metres of temporary licences.

Future

The LRMP and Forest Practices Code requirements could affect future harvest levels (rationale 19).

2.5.3 Opportunities to Increase Timber Supply

With a significant Fall Down projected to begin in less than 20 years, the District's main silvicultural priority is to mitigate a reduction in the AAC by increasing yield from the harvested area within the TSA.

Potential Strategies by Response Time Frame

Response Time Frame		Objective/Action	Anticipated Result
♦ Short Term	1.	Identify backlog, reclassify as needed, treat remaining backlog.	Maintain the current harvest level.
	2.	Minimize NRL's of 34,000 m^3/yr due to balsam bark beetle.	Mitigate losses due to balsam bark beetle, pine beetle, spruce beetle, tomentosus and stem rust.
	3.	Minimize NRL's of 3,000 m^3/yr due to pine beetle.	
	4.	Minimize unsalvageable losses due to spruce beetle.	
	5.	Identify location and area affected, quantify losses due to tomentosus.	
	6.	Identify location and area affected by rust, mitigate losses.	
♦ Mid Term	7.	Increase growth of existing stands shortly before harvest.	Smooth transition to a lower AAC.
	8.	Understory retention.	
	9.	Expand THLB.	
	10.	Increase regenerated stand yields.	
	11.	Manage 25% of the annual harvested area for increased yield.	
♦ Long Term	ve.		Increase LTHL from 424,000 to 650,000.

Potential Treatments and Analysis Results

Treatment	Comment	Treatable Area
♦ Fertilization	Reduce overstocking of mature lodgepole pine stands (stocking class 3 and 4) and shorten rotation by fertilizing to make these stands available sooner for harvest.	Target high elevation 60-yr old balsam (S minor), SI 15+. Target young stands and spaced stands of pine balsam (subalpine fir0.
♦ Commercial Thinning	Priority on age classes 2, 3, and 4 stands that exceed 3,000 stems/ha.	Target same areas as above.
♦ Juvenile Spacing	Apply in conjunction with pruning and some fertilizing.	Target 10% of the annual area harvested.
♦ Backlog NSR	Reforest ASAP.	

Working Targets

Working targets in the Bulkley TSA aim to reduce Fall Down by maximizing yield and increase the quality of timber in the TSA.

Reducing Fall Down

The landscape level Timber Supply Fall Down Silviculture objective is to evaluate the timber supply benefit of the treatments, that is the cost of doing the treatment today versus the benefit of increasing the future timber supply. The prime objective is to address timber supply shortages. It is important to recognize that volume targets and costs may be secondary to the achievement of operability within 20-80 years.

The stand level Timber Supply Fall Down Silviculture objective is to place a priority on incremental silviculture treatments on age class 2, 3 and 4 stands that exceed 3,000 stems/ha. All prescriptions must address the fall down window. Good sites will grow into the window more quickly than poorer sites. Prescriptions for stands to be treated must show how they will achieve diameters and volume targets in the key elements of this strategy, within 80 years. Commercial thinning, fertilization, and juvenile spacing are the currently available treatment options to achieve these goals.

2.5.4 Opportunities to Improve Timber Quality

Potential Strategies by Response Time Frame

Response Time Frame	Strategy/Action	Anticipated Result
• Short Term	Manage 50% of the annual harvested area to achieve sawlog targets in the following table. Manage 10% of the annual harvested area for high quality, high value, 35 cm min. diameter, clear sawlog production.	Maximize Mean Annual Increment (MAI) while maintaining piece size and minimizing harvest age by using Tipsy for TASS to model stands.
• Mid Term	See above.	
• Long Term	Control Species, increase piece size, improve wood quality	More desirable, market niche

Sawlog Targets in the Bulkley TSA

Leading Species	Site Index	Mean Diameter	Volume/ha
Pine	<19	21 cm	275 m^3
Pine	19+	22 cm	325 m^3
Other Conifers	<20	25 cm	400 m^3
Other Conifers	20+	25 cm	450 m^3

Potential Treatments and Analysis Results

Treatment	Comment/ Potential Treatment Regimes	Treatable Area
• Spacing	Apply to achieve product targets.	Effective density between 900 and 3000 stems per ha.
• Commercial Thinning		Effective density between 900 and 3000 stems per ha. Apply in Landscape Corridors.
• Pruning	Apply to achieve product targets.	
• Space/ Prune	Prune (1 lift) at 6 m (top 250 stems)	Stands with a Pine species component greater than 80% and a site index>SI 19. Maximum recommended effective density at free growing on these stands is 5,000 stems/ha.
• Fertilization	Apply to achieve product targets.	Effective density between 900 and 3000 stems per ha.

Working Targets

- **Sawlogs**: Manage 50% of the annual harvested area to maximize mean annual increment while maintaining sawlog target piece size and minimizing rotation.
- **Premium Sawlogs**: Manage 10% of the annual harvested area for premium Pine sawlogs.
- **Increased Yield**: Manage 25% of the annual harvested area for increased yield and produce a variety of products.
- **No Target:** 15% of the annual harvested area will have no product target.

Because the Bulkley TSA will soon receive results from a Type II silviculture analysis, which will produce a table similar to Attachment 9, it was felt that it would be inefficient to approximate the results of this comprehensive analysis.

2.5.5 Bulkley-Cassiar Forest District Sustainable Harvest Data

The silviculture program proposed in this plan is listed in the following five tables. It assumes a steady state of activities and funds over the next five years to reduce fall down, achieve timber volume and quality targets. Funding levels proposed are in keeping with historical activities and funding levels. Woodlot activities for 2001/02 are included in the tables.

2.5.5.1 Enhanced Forestry Table

Activities	Treatment Area Goals (ha)					Plan 2001/02	
Stand Tending	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	0	0	0	0	0	0	0
Spacing	300	300	300	300	300	800.00	240000
Pruning	300	300	300	300	300	800.00	240000
Fertilizing	0	0	0	0	1500	0	0
Other	0	0	0	0	0	0.00	0
Totals hectares	600	600	600	600	2100	800.00	480,000
Planning and prescriptions							65,000
Total dollars							545,000
Forest Health Enhancement							
Spacing	100	100	100	100	100	700.00	70000
Pruning	0	0	0	0	0	0.00	0
Other treatments	100	100	100	100	100	100.00	10000
Totals hectares	200	200	200	200	200	400.00	80,000
Habitat Supply and Biodiversity Enhancement							
Treatments	100	100	100	100	100	200.00	20000
Domestic Range							
Treatments	0	0	0	0	0	0.00	0
Enhanced Forestry Activities - Management Unit Total							
Surveys	0	0	0	0	0	0	0
Spacing	400	400	400	400	400	775.00	310,000
Pruning	300	300	300	300	300	800.00	240,000
Fertilizing	0	0	0	0	1,500	0	0
Other stand tending activities	200	200	200	200	200	150.00	30000
Totals hectares	900	900	900	900	2400	644.44	580,000
Planning and prescriptions							65,000
Studies funding							60000
Total dollars							705,000

2.5.5.2 Backlog Program Table

Activities	**Treatment Area Goals (ha)**					**Plan 2001/02**	
Legal Obligations	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	0	0	0	0	0	0.00	0
Site preparation	0	0	0	0	0	0.00	0
Planting	0	0	0	0	0	0.00	0
Brushing	0	0	0	0	0	0.00	0
Max. density spacing	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Seed purchase	0	0	0	0	0	0.00	0
Total legal obligations							0
Backlog Reforestation							
Surveys	4500	4500	4500	4500	4500	15.56	70000
Site preparation	0	0	0	0	0	0.00	0
Planting	25	25	25	25	25	600.00	15000
Brushing	150	150	150	150	150	733.33	110000
Totals hectares	4675	4675	4675	4675	4675	41.71	195,000
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning dollars							65,000
Total backlog reforestation							260,000
Impeded areas							
Surveys	0	0	0	0	0	0.00	0
Brushing	0	0	0	0	0	0.00	0
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Prescriptions and planning dollars							0
Total impeded areas							0
Site Restoration							
Fill planting	0	0	0	0	0	0.00	0
Rehabilitation	0	0	0	0	0	0.00	0
Reforestation	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning dollars							0
Total site restoration							0
Backlog Program Activities - Management Unit Total							
Surveys	4500	4500	4500	4500	4500	15.56	70000
Site preparation	0	0	0	0	0	0.00	0
Planting	25	25	25	25	25	599.93	15000
Brushing	150	150	150	150	150	733.32	110000
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	4675	4675	4675	4675	4675	41.71	195000
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning							65,000
Recommended studies							0
Total backlog program							260,000

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

2.5.5.3 Performance Measures Based on Activities Planned for 2001/2002

	Performance Measure	Tree Improvement	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A	**Planned treatment area (ha) in 2001/2002**	25	0	500	0	25	150	400	300	0	1,600	
1.0	**Timber Supply**											
1.1	Potential volume/ha gain (m3/ha/yr)	0.34	0	0.25	0	1.9	0.25	0	0	0.40		
1.2	Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3	Pot. tot. merch. vol. increment in 65 yrs. (m3)	553	0	8,125	0	3,088	2,438	0	0	0		**14,203**
1.4	Est. yrs reduced to achieve mngt objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4	Est. area that will be reclass. stocked (ha)			800								**800**
1.5	Est. area declared as free growing (ha)			3,000								**3,000**
2.0	**Wood Value**											
2.1	Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0	**Employment**											
3.1	Estimated short term employment (person days/ha)	0.1	0.34	0.1	0.95	2	2.61	3.96	4.54	0.18	0.1	
3.2	Estimated total employment (person days/year)	3	0	50	0	50	392	1,584	1,362	0	160	
3.3	Estimated total full time equivalent positions (FTE)	0	0	0	0	0	2	9	8	0	1	**20**
4.1	**Forest Health Enhancement (ha)**											**200**
5.1	**Habitat Supply**											
5.2	Planned area for specific wildlife forage or habitat creation in 2001/2002 (ha)											**100**
5.3	Est. area with secondary value provided to biodiversity (ha)											**100**

2.5.5.4 Studies Table

The following studies are also included in the Backlog and Enhanced tables of the RMP under studies and treatments. There are other studies that may be suitable in other years but they have not been included. The studies listed below are recommendations from the Bulkley Silviculture Analysis.

Rank	Project Name	FRBC's Cost 2001/2002
1	Cost benefit analysis of chemical vs. natural fertilizers	$20,000
2	Literature review of Wildlife Habitat Supply Analysis and Modelling	$20,000
3	Review information required by the Chief Forester to change OAF value in the Timber Supply Analysis	$20,000
4	Review non-merchantable timber types in the IRM to determine how these can contribute to the future TSA timber supply.	$20,000

Project Descriptions by Rank

1. A literature review of costs and effectiveness of Chemical versus Natural Fertilizers. A literature review of successful and unsuccessful results from fertilization in the worlds Boreal and Sub-Boreal Forests. What volume, wood quality and piece size gains can be expected? What are the impacts on water quality, forest health and overall ecosystem health? A recommendation on fertilization regimes by site series and site index. A literature review of the results of fertilization of 20-60 year old Spruce and Balsam. This item includes a 5th re-measurement of plots established in the Blunt to determine the effect of spacing balsam and spruce and fertilizer applied in Sept 2000.

2. A literature review of Wildlife Habitat Supply Analysis and Modelling in North America. A recommendation on how to proceed and the expected costs to carry out a wildlife habitat supply analysis in the Bulkley TSA.

3. A review of the information required by the Chief Forester to change the value of OAF in the Timber Supply analysis and a recommendation on whether to proceed with data collection to improve the OAF values.

4. A review of the non-merchantable timber types, in the IRM, zone excluded from the Bulkley Timber Supply analysis, to determine by what means, if any, that these areas can be harvested economically and successfully reforested, so that they can contribute to the future TSA timber supply.

2.5.5.5 Bulkley-Cassiar Forest District Summary Table

Woodlot information is not included in this section.

	Treatment Area Goals (ha)					Plan 2001/02	
	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	900	900	900	900	2,400	644	580,000
Planning, prescriptions and seedlings							125,000
Backlog Program Field Activities	4,675	4,675	4,675	4,675	4,675	42	195,000
Planning, prescriptions and seedlings							65,000
Totals	5,575	5,575	5,575	5,575	7,075		965,000

Performance Measures

Potential total merchentable volume increment in 65 years	14,203 m^3
Estimated ha that will be reclassified as stocked	800 ha
Estimated ha that will be declared as free growing	3,000 ha
Estimated total full time equivalent positions generated	20 FTEs
Forest health enhancement area	200 ha
Planned area for specific wildlife forage or habitat creation	100 ha
Estimated area with secondary value provided to biodiversity	100 ha

2.5.5.6 Woodlot Program Table

The woodlot program for the Bulkley-Cassiar Forest District is based on discussions with the Bulkley Woodlot Association and the Woodlot Forester for the District. The following table is based on the average number of hectares each woodlot licensee is able to treat.

	Treatment Area Goals (ha)					Plan 2001/02	
	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	150					800	120,000
Planning, prescriptions and seedlings							7,500
Backlog Program Field Activities	300					720	216,000
Planning, prescriptions and seedlings							15,000
Totals	450						358,500

2.6 *Kispiox Forest District*

2.6.1 Basic Data

The Kispiox Timber Supply Area (TSA) and the Cranberry TSA are within the Kispiox Forest District. The management issues of both TSAs are similar and District programs do not distinguish between the two areas. All management direction is therefore rolled-up to the District level. Basic data for each TSA includes:

Land Area

Cranberry TSA

Description	Area (ha)	Area (%)
Total Area of TSA	76,800	100
Total Productive Crown Forest	60,400	79
Net Timber Harvest Land Base (THLB)	32,800	43

TSR2 data - rounded to nearest 100 ha

Kispiox TSA

Description	Area (ha)	Area (%)
Total Area of TSA	1,222,600	100
Total Productive Crown Forest	749,800	61
Net Timber Harvest Land Base (THLB)	317,900	26

Source: TS analysis report - rounded to nearest 100 ha.

Annual Allowable Cut (AAC)

Cranberry TSA

AAC Type	Pre-TSR (m^3)	TSR1 (m^3)	TSR2* (m^3)
Conventional	110,000	110,000	110,000
Deciduous			
Insect/Disease			
Marginal			
Total	110,000	110,000	110,000
Woodlot AAC			0

*effective June 1/98

Ninety percent of the AAC for the Cranberry TSA is allocated to one forest licence which is currently held by C GED Forest Products Ltd. The C GED licence, as well as the C GED timber mill in Kitwanga is owned and managed by the Gitwangak band of the Gitxan First Nation. The remaining AAC is allocated to the Small Business Forest Enterprise Program.

The results of the second Timber Supply Review (TSR2) for the Cranberry TSA (1997) suggest that the current harvest level of 110,000 cubic metres per year can be maintained for up to 9 decades followed by a reduction in the harvest level over the subsequent 3 decades to the long-term harvest level of 87,000 cubic metres per year.

Kispiox TSA

AAC Type	Pre-TSR (m^3)	TSR1* (m^3)	Change (%)
Conventional	1,092,611	1,092,611	0.0
Deciduous			
Insect/Disease			
Marginal			
Total	1,092,611	1,092,611	0.0
Woodlot AAC	not included in conventional AAC	7,389	

*effective December 30/96

According to the Kalum Timber Supply Area: Rationale for Allowable Annual Cut (AAC) Determination (1999), most of the Kispiox TSA timber is processed by four sawmills and a whole log chipping plant. These mills are operated by Repap Enterprises Inc., Isolite-Stege, C GED Forest Products Ltd. and Kitwanga Lumber Company Ltd.

Under current management assumptions, the first Timber Supply Review (TSR 1) indicates that the current harvest level of 1,100,000 cubic metres per year in the Kispiox TSA can be maintained for 4 decades, followed by a 10% decline per decade for 10 decades to a long-term harvest level of 630,000 cubic metres per year.

Site Class Profile

Classes*	poor	medium/good
Cranberry TSA	36%	64%
Kispiox TSA	73%	27%

Age Class

Age Class	Cranberry (%)	Kispiox (%)
NSR	3	2
0	0	2
1-20	18	12
21-40	6	3
41-140	12	13
141-250	40	30
250+	21	38
Total		100

TSR data

In the Cranberry TSA, about 68% of stands in the timber harvesting land base are at or above the minimum harvestable age. Conversely, approximately 95% of the total volume of standing timber is currently above the minimum harvestable age in the Kispiox TSA.

Tree Species Profile

The species composition in the Kispiox TSA is 1% cedar, 8% pine, 12% spruce, 31% balsam and 47.5% hemlock. The species composition in the Cranberry TSA is 3% aspen/birch, 3% cottonwood, 12% pine, 12% spruce, 12.5% balsam and 58% hemlock.

Incremental Silviculture History

In the past three years, no incremental silviculture has occurred in the Kispiox Forest District. In 1996, approximately 100 ha of pruning occurred. Spacing occurs in conjunction with brushing to maximize efficiency.

2.6.2 Issues

The Kispiox LRMP was approved by Government and declared as a higher level plan under the Forest Practices Code Act of British Columbia in April, 1996. This plan provides strategic direction to a wide range of important values, and reflects the views of many community, government and industry participants. By law, operational forestry plans must be consistent with the objectives and resource management zones within the LRMP. These strategic objectives naturally link to the objectives of FRBC, and are reflected in the Kispiox Forest District and PRFR's RMPs.

Presently, there are 12 woodlot licences issued in the Kispiox TSA. The woodlot AAC contribution is 13,708 cubic metres per year. Woodlot licensees have basic obligations until "Free Growing". Their silvicultural priorities are similar to District priorities since many of the District issues also affect woodlot licensees.

Individual Issue Analysis

Several issues are reflected in the Kispiox Forest District's resource stewardship priorities that relate to the FRBC Sustainable Harvest program for 2000-2001. These are:

- Consistently reduced funding in the silviculture area, resulting in only a small portion of backlog not-satisfactorily-restocked areas being treated over the past several years. Round '2' of the Kispiox Timber Supply Review Process began in 1999, and backlog lands are incorporated in the base case, likely with some negative impact on timber supply. As stewards of the forest resource, treatment and elimination of backlog lands is a high priority for the ministry. The Kispiox Forest District has prepared a detailed silviculture strategy outlining all projects required to address backlog and other critical silviculture needs in a realistic and timely manner. The content of this resource management plan is based upon the district strategy.
- Consistently reduced funding in silviculture resulting in only a small portion of the backlog free-growing program being addressed. Potential timber supply issues include: conversion of all satisfactorily restocked land to NSR; conversion of satisfactorily restocked land to mixed wood; and, reduction of growth potential of satisfactorily restocked stands due to vegetation competition.

2.6.3 Opportunities to Increase Timber Supply

The Kispiox Forest District is primarily concerned with the overwhelming amount of backlog sites within the District and the associated negative impact on timber supply. Otherwise, opportunities to increase timber supply over the short and mid terms are limited. In the short term, the preponderance of old age stands limits the potential. In the mid term, commercial thinning is not viable as it would be at the expense of reducing long term harvest level further than forecast. Hemlock stands do not show consistent response to fertilization.

Potential Strategies by Response Time Frame

Response Time Frame	Objective/Action	Anticipated Result
♦ Short Term	1. Bring all backlog sites (approx. 45,000 ha) to free growing status by 2010.	Short term harvest levels as per base case forecast.
	2. Maintain crop tree vigor by reducing impact of forest pests.	Better estimates of forest health agents will allow for more accurate estimates of timber supply losses from stands that do not achieve stocking and site potential.
	3. Identify backlog NSR. Reclassify as needed, treat remaining area.	Maximize site potential, maintain AAC.
	4. Identify location and areas affected by Pli rust and needle casts, mitigate losses. Rehab as required.	Mitigate volume losses.
♦ Mid Term	1. Increase management emphasis and harvests in deciduous stands.	Increase mid term harvest levels by 2%. Length of mid term transition period

Response Time Frame	Objective/Action	Anticipated Result
		shortened due to higher long term harvest level (see "long term").
	2. Reduce Green-up ages	
	3. Identify location and extent of IBB and Tomentosus impacts	
	4. Determine the effects of Bl ingress in IBB infected stands.	
◆ Long Term	1. Confirm site indices.	1. Increase LTHL by 20%;
	2. Increase regenerated stand volumes by 20% by:	2. Increase LTHL by 15%;
	• using improved and larger planting stock;	
	• reducing stand voids (OAF1) from 15% to 10%; and	Total increase: 35%.
	• fertilizing suitable stands.	Stabilize harvests at higher long term level 4 decades earlier than in base case.
	3. Rehabilitate 25% of unmerchantable forest types, roads and landings	
	4. Investigate Commercial Thinning opportunities.	

Potential Treatments and Analysis Results

Treatment	Comment	Treatable Area
◆ Spacing		
◆ Fertilization	Fertilization not assessed in TSR.	Candidate stands limited by type and location.
◆ Commercial Thinning	Chief Forester notes opportunity will increase as managed stands move into more appropriate age ranges in future decades (rationale, 21). Not required to relieve adjacency constraints as this is not a limiting factor. Priority on age class 2 & 3 stands where stocking is greater than 3000 stems per hectare.	Current known and accessible opportunity is minimal (rationale, 21).
◆ Backlog NSR	All assumed to be regenerated (or reclassified) in next 5 years. No additional opportunity.	4 455 ha
◆ Rehab	Once backlog program is completed, investigate rehab opportunities for PFT, deciduous leading or poor sites, in-block roads and landings.	

Working Targets

The Kispiox Forest District silviculture program works to maintain the timber supply for sustainability in support of the current model or rate of cut as determined by the Chief Forester. Summaries of TSR timber supply issues are described in section 2.6.2.

Maintenance activities (backlog reforestation)
Ensure basic legal obligations and plantation maintenance activities are addressed as the **highest priority**.

Working Target 1:
To ensure prompt and effective reforestation and stand tending on backlog site until free growing is achieved; and,

To declare all backlog sites Free Growing by the year 2010.

Strategies to meet Working Target 1:
Conduct an *accelerated* stocking/free growing assessment to maintain up to date information on land status and brushing treatment needs to ensure FG is created or maintained. Attempt to prepare a treatment prescription in accordance with Ministry Policy immediately after the survey season for every site proposed for brushing treatment.

Conduct brushing treatments on high risk stands to protect existing investments by ensuring impeded plantations remain Satisfactorily Restocked (SR) and achieve free growing status by the year 2010.

When possible and economically viable, implement stand improvement treatments (spacing concurrent with brushing treatments) that will increase the number of free growing stems on impeded or marginally free growing stands to produce higher volume stands. High priority is established where conifer crop tree stocking is greater than 5,000 sph; greater than 3,000 but less than 5,000 is medium priority.

Accelerate stand tending of backlog sites to meet Working Target 1. It is estimated that 2,000-3,000 hectares per year of stand tending will be necessary.

Continuously maintain health and vigor of reforested sites (See Working Target 5, Forest Health).

The cumulative cost of all brushing treatments should not exceed $2,000 per hectare.

Treat stands with suitable road access or where access requires minor upgrading.

Working Target 2:
To facilitate achievement of free growing, some blocks will require inclusion of deciduous.

Deciduous may become more important in the future wood supply and to dismiss its value based on present market conditions reduces future management options. Considered a Ministry Principle, treating stands to produce a diversified portfolio of forest products allows BC to minimize risk and better respond to changing market conditions.

Strategies to meet Working Target 2:
Maintain, where economically and biologically feasible, a component of deciduous in backlog areas - up to 20 percent of the inventory label for all blocks.

Deciduous component is not to conflict with achievement of conifer stocking levels.

Consider accepting deciduous on backlog areas as 'acceptable crop trees' where conifer stocking is less than desired. Accept the largest, most vigorous trees, preferring birch, cottonwood, aspen in descending priority. This applies on a site-specific basis where site and stocking conditions warrant.

Deciduous which has grown to 15 cm dbh should not be felled or girdled during any stand tending treatment. These trees are considered near-merchantable, and felling may damage conifer crop trees or sprouting may negatively influence conifer tree free growing state.

Working Target 3:
Increase productive area by rehabilitation and reforestation of sites currently classified as **NSR** to maintain the LTHL.

To eliminate Not Satisfactorily Restocked (NSR) areas by 2002.

Strategies to meet Working Target 3:

- Conduct an *accelerated* stocking assessment program to maintain up to date information on land status and site preparation and planting treatment needs. Attempt to prepare a backlog SP or a planting prescription immediately after the survey season for every site proposed for planting or fill planting.
- Identify NSR that is more appropriately managed for non-timber resources and revise management strategies to accept existing and pre-existing conditions.
- For Backlog areas disturbed between January 1, 1982, to September 30, 1987, establish baseline information upon which to rank areas for treatment, and to develop Backlog Silviculture Prescriptions. Where economically viable, complete all site preparation and planting on **Good, Medium, and Poor** sites by the year 2002.
- For Backlog areas disturbed before January 1, 1982, identify **Good and Medium** sites first, then Poor and Low sites, and confirm that indicated site productivity is correct. Establish baseline information upon which to rank areas for treatment and to develop Backlog Silviculture Prescriptions. Where economically viable, complete all site preparation and planting on **Good and Medium** sites by the year 2002.
- The following areas should **NOT** be scheduled for planting:
- Areas where the average age of well-spaced stems is less than 12 years and stocking exceeds existing minimums for the ecosystem association (Reference: *Establishment to Free Growing Guidebook*).
- Areas where the average age of well-spaced stems is 12 years or greater and the number of well-spaced stems is 60% of the Guidebook minimum's. This is a guideline only. Each block should be individually considered before applying this reduced "backlog rule" stocking standard.

- Areas coded as inoperable or environmentally sensitive.
- Areas that were selectively logged or harvested by the shelterwood or seed tree system. Often these areas regenerate naturally and may not require further treatments other than a free growing assessment.
- Areas less than five hectares often regenerate naturally and are often considered low priority or uneconomic to treat.
- Use 'A' class seed or better and large planting stock in order to increase regeneration stand volume and minimize future brushing treatment.
- Do not reforest if the cumulative cost of all brushing treatments is estimated to exceed $1,500 per hectare.
- Treat stands with suitable road access or where access requires minor upgrading.

2.6.4 Opportunities to Improve Timber Quality

The effects of incremental silviculture on the future quality of the timber resource were not analyzed in the Timber Supply Review. The Timber Supply Review for the Kispiox TSA indicates that during four years ending on December 31, 1995, 57% of the timber harvested was of sawlog quality and 43% was pulp. Forest district staff feel that this profile is unlikely to change significantly in the future. Therefore, incremental silviculture in the District is only implemented when the benefits to the TSR outweigh the costs of applying the treatment and of diverting investments from backlog initiatives.

Potential Strategies by Response Time Frame

Response Time Frame	Strategy/Action	Anticipated Result
♦ Short Term	Spacing	The time required for volume recovery is directly related to spacing intensity. It is unlikely that volume recovery will occur before harvest, therefore economic viability is a key factor to consider before proceeding with this type of treatment. A minimum of 4% return on investment.
♦ Mid Term		
♦ Long Term		

Potential Treatments and Analysis Results

Treatment	Comment/ Potential Treatment Regimes	Treatable Area
◆ Spacing	Poor crop tree selection may further risk volume recovery.	High productivity sites or combination with other treatments--prune, fertilize. Lodgepole pine stands. Stands 5,000-10,000 stems/ha are high priority. Stands 3,000-5,000 stems/ha are med. priority.
◆ Commercial Thinning		Currently few suitable timber types on accessible terrain.
◆ Pruning	Considered once backlog obligations are reduced.	
◆ Space/ Prune		
◆ Space/ Prune/Fert		
◆ Other		

Working Targets

Incremental activities

The ministry policy is that incremental silviculture programs will be used to manage forests beyond the free growing stage to meet the sustainable economic, social and environmental objectives of the people of British Columbia. These objectives will be met by improving the forest health, stand value, wildlife habitat, wood flow and employment opportunities. Incremental silviculture occurs on those stands that have met the basic “free growing” standards where it has been shown that it is economically viable to perform the treatment, be that spacing, pruning or fertilization.

This work holds high to medium priority inasmuch as there are benefits to be realized in the TSR. **However it is important to not divert investment and effort from backlog initiatives to fulfill enhanced forestry strategies.** Treating backlog NSR sites with uniform stocking and protecting plantation investments provides greater return on investments than incremental activities. However, in certain instances, financial analysis may reflect otherwise, depending upon comparisons of specific sites.

Working Target 4:

Carry out a wide range of silviculture treatments that will provide a *diversified portfolio of forest products and conditions* in order to minimize risk and better respond to future market conditions. Ensure the development of regimes that will increase the regenerated stand volume to minimize the *mid-term provincial shortfall* and attempt to maintain the current AAC as the LTHL in the Kispiox TSA. Attempt to increase the overall log quality.

Strategies to meet Working Target 4:

- Develop a series of density management regimes to ensure a wide range of densities, forest conditions and habitats are maintained over the landscape. These regimes may include juvenile spacing, fertilization, pruning, commercial thinning and no-treatment options. Until such specific regimes are developed, the *interim strategy* is to produce stand density management prescriptions that will maximize piece size without compromising the total volume production and that will leave opportunities for fertilization and commercial thinning.

- Implement various regimes of density control that will maximizes MAI, volume and piece size in age class 1 & 2 stands. Spacing stands between 5,000 – 10,000 stems per hectare are high priority. Stands between 3,000 – 5,000 stems per hectare are medium priority. Crop tree vigor must take precedence over uniformity of spacing to mitigate the "chainsaw" effect.

- Prune stands as outlined in the "Pruning guidebook.". This strategy will be more fully developed when backlog obligations have been sufficiently reduced.

- Implement a fertilization program targeting first, previously spaced age class 3 & 4 pine stands and thrifty immature untreated pine stands with favorable live crown size and vigor. Secondly, fertilize younger stands with room for crown expansion. Thirdly, fertilize at time of fill-planting on difficult to regenerate sites to assist establishment and resistance to competition.

- To set up stands for commercial thinning using density control treatments in order to provide interim harvest without reducing the potential of the residual stand.

- Investigate options for rehabilitation of non-merchantable forest stands.

- Treat stands with suitable road access or where access requires minor upgrading.

2.6.5 Kispiox Forest District Sustainable Harvest Data

The silviculture program proposed in this plan is listed in the following tables. Although the plan consists mainly of backlog activities, these are expected to decline over the next five years. Because backlog work is addressed as a unit by a major licensee, Woodlot activities are included in the Backlog Program Table. There is approximately $60,000 worth of backlog work remaining on woodlots which will be complete in 2001/02. No accounting is made for future funding levels. These tables are based solely on stewardship needs.

2.6.5.1 Enhanced Forestry Table

Activities	**Treatment Area Goals (ha)**					**Plan 2001/02**	
Stand Tending	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	3600	30400	5000	5000	5000	50	180000
Spacing	0	200	200	200	200	0	0
Pruning	0	100	100	100	100	0	0
Fertilizing	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Totals hectares	3600	30700	5300	5300	5300	50	180,000
Planning and prescriptions							0
Total dollars							180,000
Forest Health Enhancement							
Spacing	0	0	0	0	0	0	0
Pruning	0	0	0	0	0	0	0
Other treatments	0	0	0	0	0	0	0
Totals hectares	0	0	0	0	0	0	0
Habitat Supply and Biodiversity Enhancement							
Treatments	0	0	0	0	0	0	0
Domestic Range							
Treatments	0	0	0	0	0	0	0
Enhanced Forestry Activities - Management Unit Total							
Surveys	3600	30400	5000	5000	5000	50	180,000
Spacing	0	200	200	200	200	0	0
Pruning	0	100	100	100	100	0	0
Fertilizing	0	0	0	0	0	0	0
Other stand tending activities	0	0	0	0	0	0	0
Totals hectares	3600	30700	5300	5300	5300	50	180,000
Planning and prescriptions							0
Studies funding							0
Total dollars							180,000

2.6.5.2 Backlog Program Table

Activities	Treatment Area Goals (ha)					Plan 2001/02	
Legal Obligations	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	0	0	0	0	0	0	0
Site preparation	0	0	0	0	0	0	0
Planting	0	0	0	0	0	0	0
Brushing	200	200	200	200	200	700	140000
Max. density spacing	0	0	0	0	0	0	0
Totals hectares	200	200	200	200	200	700	140,000
Seed purchase	0	0	0	0	0	0	0
Total legal obligations							140,000
Backlog Reforestation							
Surveys	500	500	0	0	0	20	10000
Site preparation	0	0	0	0	0	0	0
Planting	0	200	0	0	0	0	0
Brushing	0	200	200	200	200	0	0
Totals hectares	500	900	200	200	200	20	10,000
Seed purchase	0	200000	0	0	0	500	0
Prescriptions and planning dollars--$3K Rx dev't after su, $4K layout							7,000
Total backlog reforestation							17,000
Impeded areas							
Surveys	6000	6000	6000	6000	6000	25	150000
Brushing	2000	2000	2000	2000	2000	700	1400000
Density spacing	0	0	0	0	0	0	0
Totals hectares	8000	8000	8000	8000	8000	194	1,550,000
Prescriptions and planning dollars--$50k Rx dev't, $40K layout							90,000
Total impeded areas							1,640,000
Site Restoration							
Fill planting	0	0	0	0	0	0	0
Rehabilitation	32	100	100	100	100	1400	44800
Reforestation (& fert.)	32	100	100	100	100	484	15488
Totals hectares	64	200	200	200	200	942	60,288
Seed purchase	32,000	100000	100000	100000	100000	0.25	8,000
Prescriptions and planning dollars--for 2002 road/landing rehab proj.							30,000
Total site restoration							98,288
Backlog Program Activities - Management Unit Total							
Surveys	6500	6500	6000	6000	6000	25	160000
Site preparation	32	100	100	100	100	1400	44800
Planting	32	300	100	100	100	484	15488
Brushing	2200	2400	2400	2400	2400	700	1540000
Density spacing	0	0	0	0	0	0	0
Totals hectares	8764	9300	8600	8600	8600	201	1760288
Seed purchase	32000	300000	100000	100000	100000	0	8000
Prescriptions and planning							127,000
Recommended studies							0
Total backlog program							1,895,288

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

2.6.5.3 Performance Measures Based on Activities Planned for 2001/2002

	Performance Measure	Tree Improvement	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A	**Planned treatment area (ha) in 2001/2002**	32	0	6,500	32	32	2,200	0	0	0	8,796	
1.0	**Timber Supply**											
1.1	Potential volume/ha gain (m3/ha/yr)	0.34	0	0.25	0	1.9	0.25	0	0	0.40		
1.2	Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3	Pot. tot. merch. vol. increment in 65 yrs(m3)	707	0	105,625	0	3,952	35,750	0	0	0		**146,035**
1.4	Est. yrs reduced to achieve mngt objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4	Est. area that will be reclass. as stocked (ha)			400								**400**
1.5	Est. area declared as free growing (ha)			2,000								**2,000**
2.0	**Wood Value**											
2.1	Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0	**Employment**											
3.1	Estimated short term employment (person days/ha)	0.1	0.34	0.1	0.95	2	2.61	3.96	4.54	0.18	0.1	
3.2	Estimated total employment (person days/year)	3	0	650	30	64	5,742	0	0	0	880	
3.3	Estimated total full time equivalent positions (FTE)	0	0	4	0	0	32	0	0	0	5	**41**
4.1	**Forest Health Enhancement (ha)**											**0**
5.1	**Habitat Supply**											
5.2	Planned area for specific wildlife forage or habitat creation in 2001/2002 (ha)											**0**
5.3	Est. area with secondary value provided to biodiversity (ha)											**2,200**

2.6.5.4 Studies Table

No studies are proposed, at this time.

2.6.5.5 Management Unit Summary Table

Woodlot information is not included in this section.

	Treatment Area Goals (ha)					Plan 2001/02	
	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	3,600	30,700	5,300	5,300	5,300	50	180,000
Planning, prescriptions and seedlings							0
Backlog Program Field Activities	8,764	9,300	8,600	8,600	8,600	201	1,760,288
Planning, prescriptions and seedlings							135,000
Totals	12,364	40,000	13,900	13,900	13,900		2,075,288

Performance Measures

Potential total merchentable volume increment in 65 years	146,035 m^3
Estimated ha that will be reclassified as stocked	400 ha
Estimated ha that will be declared as free growing	2,000 ha
Estimated total full time equivalent positions generated	41 FTEs
Forest health enhancement area	0 ha
Planned area for specific wildlife forage or habitat creation	0 ha
Estimated area with secondary value provided to biodiversity	2,200 ha

2.6.5.6 Woodlot Program Table

The woodlot program for the Kispiox Forest District is based on an assessment by the District Woodlot Forester.

	Treatment Area Goals (ha)					Plan 2001/02	
	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	50					1,000	50,000
Planning, prescriptions and seedlings							0
Backlog Program Field Activities	0						0
Planning, prescriptions and seedlings							0
Totals	50	0	0	0	0		50,000

2.7 *Kalum Forest District*

2.7.1 Basic Data

The management units included in this RMP are: Kalum TSA, Nass TSA, TFL 1 (Skeena Cellulose) and TFL 41 (West Fraser). In addition to these, it is expected that the Nisga'a Lisims Government will pursue funding opportunities with Forest Renewal BC for silviculture activities within Nisga'a Lands.

Land Area

TSA	Total Area of TSA (ha)	Net Timber Harvesting Land Base-THLB (ha)
Kalum TSA	540,000	98,256
Nass TSA	604,754	255,761
TFL 1		
TFL 41	703,745	69,686
Nisga'a Land		
Total	1,848,499	423,703

Annual Allowable Cut (AAC)

TSA	AAC (m^3)
Kalum TSA	436,884
Nass TSA	1,142,400
TFL 1	611,000
TFL 41	400,000
Total	2,590,284
Woodlot AAC	4,316

According to the Kalum Timber Supply Area Analysis Report (1999), the processing facilities in the Kalum TSA also rely on other TSAs, TFLs, woodlots and private lands for their timber supply. Skeena Cellulose operates a large sawmill in Terrace with an annual capacity of approximately 600,000 cubic metres. West Fraser Mills Ltd. also operates a large sawmill in Terrace with an annual capacity of approximately 650,000 cubic metres. Logs not suitable for these mills are shipped to pulp mills in Kitimat or Prince Rupert. Terrace Pre-Cut conducts custom drying of Skeena Cellulose lumber. There are also a number of other small manufacturing facilities in the Forest District.

The total AAC for all tenures in the district is 2, 727,000 cubic metres per year. In 1999, the combined harvesting by all licensees was 2,090,028 cubic metres per year, from an area of 4,693 ha. This harvest level is expected to continue.

Site Class Profile

Classes	<15	15-22	25-35
Kalum TSA	44%	48%	8%
Nass TSA	16%	82%	1%
TFL 1			
TFL 41	35%	60%	5%

In the Kalum TSA, approximately 75% of the sites in the timber harvesting land base are currently classified as having good or medium site productivity, which is expressed as having site index of greater than or equal to 13 metres at age 50. Conversely, the site class profile in the Nass TSA is generally considered poor.

Age Class

Years	0-20	21-100	100-250	250+
Age Classes	(1)	(2-5)	(6-8)	(9)
Kalum TSA (TSR figure 5, page 12)	27%	29%	12%	32%
Nass TSA (TSR)	13%	2%	39%	46%
TFL 1 (MP table 2, page 23)	10%	17%	13%	60%
TFL 41 (MP table 7, page 35)	19%	7%	14%	60%

* "Other" category included in 0-20 years.

Tree Species Profile

	Hemlock	Abies	Spruce	Pine	Cedar	Deciduous
Kalum	76%	8%	6%	5%	1%	4%
Nass	54%	38%	3%	5%	0	0%
TFL 1	78%	11%	2%	4%	1%	2%
TFL 41	81%	9%	2%	0	7%	2%

Incremental Silviculture History

Over a period of about 13 years, from 1985 (FRDA I) until 1998 a combination of 3 factors (ample availability of second growth stands + plenty of labour + adequate funding) enabled the 3 agencies in the Kalum Forest District (BCFS, Skeena Cellulose and West Fraser) to carry out very ambitious incremental silviculture programs. Since 1998, funding has become increasingly constrained and is now being directed to the licensees, thereby reducing our ability to manage many second growth stands. Only the highest priority stands are now being brushed, the remainder have to be left to develop naturally.

Because of the age structure of the forests, the shorter growing season, low site productivity and limited access in the Nass TSA, incremental silviculture opportunities are concentrated in the Kalum TSA where productivity is higher.

2.7.2 Issues

Previous RMPs have included silviculture investment strategies for the 4 management units within the Kalum Forest District. A shortcoming of these strategies was a lack of provincial context. In 1999, work began on a province wide program to prepare forest level silviculture investment plans for all Timber Supply Areas and Tree Farm Licences. The purpose of the management unit silviculture strategy is to: document issues and opportunities regarding timber and habitat supply; develop priorities and rationale for backlog and incremental silviculture regimes; ensure strategic context for all Forest Renewal BC supported investments; support the RMP process; and confirm transparent criteria for investment decisions between management units. Late in 1999 that process began for the Kalum TSA. TFL1 and TFL 41 will be included as soon as is practical. At this time (August 2000) a draft report for the Kalum TSA is still in-preparation, so inclusion of (even preliminary) results is speculative. A great deal of effort will go into reviewing the report to ensure that the conclusions are completely supported by data, not supposition. This is crucial in order to ensure that the recommendations can be used with confidence. Anecdotal evidence indicates that historic incremental silviculture investments can be supported by a significant increase in annual harvest. Incremental silviculture investments can also provide for an uninterrupted harvest flow (no fall-down).

The LRMP process is nearing completion. Submission to the Interagency Management Committee is expected to occur by the end of 2000, with recommendations to government in the spring of 2001. Once ratified the impact of the LRMP will be to direct activities toward some geographic areas and away from areas reserved for other resource values.

Presently, there are 4 woodlot licences issued in the Kalum TSA. The woodlot AAC contribution is 4,316 cubic metres per year. Woodlot licensees have basic obligations until "Free Growing". Their silvicultural priorities are similar to District priorities since many of the District issues also affect woodlot licensees.

Individual Issue Analysis

Issues which affect timber supply as well as timber quality in the Kalum Forest District include:

- World prices for forest products.
- Economics of harvesting stands with 40% pulp content.
- Nisga'a Lands, SBFEP operations will cease on a Nisga'a treaty effective date. Other licensee operation are covered by a five year transition strategy.
- Conventional harvesting is more constrained in visually sensitive areas.

- Commercial thinning opportunities have yet to be fully explored.
- Site productivity of second growth (managed) stands. More reliable data will help justify treatments.
- Commercial harvest of pine mushrooms may affect the "timber harvesting land base".
- Kalum Land and Resource Management Plan: the uncertainty about how this plan will affect timber supply.
- Area reductions and that affect on AAC.
- Forest Health: root rot, comandra blister rust and mountain pine beetle.

2.7.3 Opportunities to Increase Timber Supply

In the past, the silviculture strategy for the Kalum Forest District has focused on filling an age class gap. The first round of the Timber Supply Review determined that this age class gap would negatively impact timber supply. However, the latest round of the Timber Supply Review (1999) indicated that the age class gap no longer existed. Because this finding implies a major change in the direction of silviculture for the Forest District, a Level 2 silviculture analysis was initiated to further test this result. Therefore, once the findings from the Level 2 silviculture analysis are released, the Kalum Forest District will develop an updated silviculture strategy to increase timber supply.

Potential Strategies by TSA

TSA	Objective/Action	Anticipated Result
◆ Kalum and Nass	Maintain productive area by reforesting sites classified as NSR. Reforest all good and medium sites by 2002.	Maintain the current harvest level.
	Maintain investments in plantations by aggressively brushing areas as required until the areas reach free growing.	
	Capture growth enhancement potential by managing density and competition.	
	Consider rehabilitation treatments only after careful cost/benefit analysis.	
	Nisga'a Treaty: ensure obligations on core lands are met.	
	Complete the Level 2 Silviculture Strategy and analyze of the impact varying amounts of spacing have on the timber supply, to verify objective A.	
◆ TFL 1	Maintain the productive land base by reforesting areas currently classified NSR, and those lands that are found to be NSR during surveys.	Maintain the current harvest level.
	Investment will focus on cost-effective fill planting, primarily. Rehabilitation projects will not be undertaken unless they are low-risk and determined to yield a return similar to that of other potential enhanced forestry projects.	
	Maintain investments in plantations by aggressively brushing areas as required until the areas are free-growing.	

TSA	Objective/Action	Anticipated Result
	To increase stand operability through spacing (opportunity for commercial thinning and decreased final harvest age), helping mitigate any reductions in local allowable harvest levels. To increase stand value through spacing making harvesting more profitable in the Region. On select sites, to produce high-value clear wood through pruning. To maintain 6000 person days of employment annually (>30% First Nation's), focusing on longer-term jobs, where possible. Complete an analysis o the impact of varying amounts of spacing on the timber supply.	
◆ TFL 41	Maintain productive area by rehabilitation and reforestation of sites currently classified as NSR. Maintain investments in plantations by aggressively brushing areas as required until the areas are free-growing. Provide an economic sustainable saw log supply to the processing plants. Increase piece size through modification of density via spacing. Complete an analysis o the impact of varying amounts of spacing on the timber supply.	Maintain the current harvest level.

Potential Treatments and Analysis Results

Treatment	Comment	Treatable Area
◆ Spacing		All good and medium sites with densities >2500sph on slopes <60% (TFL 41), or 2000-5000 sph (BCFS), or >3500 sph (TFL 1). Single entry spacing prescribed for stands SI <20, no CT planned (TFL 41).
◆ Fertilization		
◆ Commercial Thinning (CT)		Limited to one entry/rotation (TFL 41, BCFS). <25 years at 1200 sph (TFL 1). >25 years at 1000 sph (TFL 1).
◆ Rehabilitation		
◆ Backlog NSR	Plant. Brush to ensure free-growing by prescribed time and protect investment. (TFLs 1, 41, BCFS)	All good and medium sites by 2000 (TFLs 1, 41), 2002 (BCFS) Fill-planting required to 2004 (TFL 1)

Working Targets

Presently, the Kalum Forest District is anticipating the results from a Level 2 silviculture strategy which will likely mean a change in direction for the District in terms of silviculture strategies and working targets. Therefore, until more specific direction becomes available, the primary working target for the District is to maintain its responsibilities as a stewardship agency.

2.7.4 Opportunities to Improve Timber Quality

The effects of incremental silviculture on the future quality of the timber resource were not analyzed in the timber supply reviews. However, the Level 2 silviculture strategy will evaluate the economic return on investments directed to pruning, spacing and fertilizing. Presently, 60% of the AAC in the Kalum TSA is sawlog quality while only 20% is of this quality in the Nass TSA.

Potential Strategies by Response Time Frame

Response Time Frame	Strategy/Action	Anticipated Result
◆ Short Term	Spacing	
	Pruning on select sites	
◆ Mid Term		
◆ Long Term	see above	Increase stand value making harvesting more profitable in the Region Produce high-value clear wood

Potential Treatments and Analysis Results

Treatment	Comment/ Potential Treatment Regimes	Treatable Area
◆ Spacing		
◆ Commercial Thinning		
◆ Pruning		SI(50)=28 (TFL 1)
◆ Space/ Prune		Prune only spaced stands with SI 26+ (TFL 41, BCFS). Pruned stands will not be thinned.
◆ Fertilization		

Working Targets

Presently, the Kalum Forest District is anticipating the results from a Level 2 silviculture strategy which will likely mean a change in direction for the District in terms of silviculture strategies and working targets. Therefore, until more specific direction becomes available, the primary working target for the District is to maintain its responsibilities as a stewardship agency.

2.7.5 Kalum Forest District Sustainable Harvest Data

Four sets of activity tables are included, one for each: Kalum TSA, TFL 1, TFL 41 and one set which is cumulative totals for all 3 (Kalum District Summaries).

2.7.5.1 Enhanced Forestry Tables

Kalum TSA

Activities	Treatment Area Goals (ha)					Plan 2001/02	
Stand Tending	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	2000	2000	2000	2000	2000	35.68	71365
Spacing	1295	1295	1295	1295	1295	1100.00	1424500
Pruning	166	166	166	166	166	1385.54	230000
Fertilizing	0	0	0	0	0	0.00	0
Other	0	0	0	0	0	0.00	0
Totals hectares	3461	3461	3461	3461	3461	498.66	1,725,865
Planning and prescriptions							39,000
Total dollars							1,764,865
Forest Health Enhancement							
Spacing	0	0	0	0	0	0.00	0
Pruning	0	0	0	0	0	0.00	0
Other treatments	1000	1000	1000	1000	1000	150.00	150000
Totals hectares	1000	1000	1000	1000	1000	150.00	150,000
Habitat Supply and Biodiversity Enhancement							
Treatments	0	0	0	0	0	0.00	0
Domestic Range							
Treatments	0	0	0	0	0	0.00	0
Enhanced Forestry Activities - Management Unit Total							
Surveys	2000	2000	2000	2000	2000	35.68	71,365
Spacing	1295	1295	1295	1295	1295	1,100.00	1,424,500
Pruning	166	166	166	166	166	1,385.53	230,000
Fertilizing	0	0	0	0	0	0.00	0
Other stand tending activities	1000	1000	1000	1000	1000	150.00	150000
Totals hectares	4461	3461	3461	3461	3461	420.50	1,875,865
Planning and prescriptions							39,000
Studies funding							0
Total dollars							1,914,865

TFL 1

Activities	Treatment Area Goals (ha)					Plan 2001/02	
Stand Tending	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	0	0	0	0	0	0.00	0
Spacing	750	750	750	750	750	1350.00	1012500
Pruning	300	400	500	500	500	1600.00	480000
Fertilizing	0	0	0	0	0	0.00	0
Other	0	0	0	0	0	0.00	0
Totals hectares	1050	1150	1250	1250	1250	1421.42	1,492,500
Planning and prescriptions							91,000
Total dollars							1,583,500

Forest Health Enhancement

Spacing	0	0	0	0	0	0.00	0
Pruning	0	0	0	0	0	0.00	0
Other treatments	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0

Habitat Supply and Biodiversity Enhancement

Treatments	0	0	0	0	0	0.00	0

Domestic Range

Treatments	0	0	0	0	0	0.00	0

Enhanced Forestry Activities - Management Unit Total

Surveys	0	0	0	0	0	0.00	0
Spacing	750	750	750	750	750	1,350.00	1,012,500
Pruning	300	400	500	500	500	1,599.99	480,000
Fertilizing	0	0	0	0	0	0.00	0
Other stand tending activities	0	0	0	0	0	0.00	0
Totals hectares	1050	1150	1250	1250	1250	1,421.42	1,492,500
Planning and prescriptions							91,000
Studies funding							65000
Total dollars							1,648,500

TFL 41

Activities	Treatment Area Goals (ha)					Plan 2001/02	
Stand Tending	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	240	240	240	270	300	45.83	11000
Spacing	210	240	270	300	300	1200.00	252000
Pruning	0	0	0	0	0	0.00	0
Fertilizing	0	0	0	0	0	0.00	0
Other (studies)	2	0	0	0	0	0.00	0
Totals hectares	452	480	510	570	600	581.86	263,000
Planning and prescriptions							75,000
Total dollars							338,000

Forest Health Enhancement

Spacing	0	0	0	0	0	0.00	0
Pruning	0	0	0	0	0	0.00	0
Other treatments	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0

Habitat Supply and Biodiversity Enhancement

Treatments	0	0	0	0	0	0.00	0

Domestic Range

Treatments	0	0	0	0	0	0.00	0

Enhanced Forestry Activities - Management Unit Total

Surveys	240	240	240	270	300	45.83	11,000
Spacing	210	240	270	300	300	1,199.99	252,000
Pruning	0	0	0	0	0	0.00	0
Fertilizing	0	0	0	0	0	0.00	0
Other stand tending activities	2	0	0	0	0	0.00	0
Totals hectares	452	480	510	570	600	581.85	263,000
Planning and prescriptions							75,000
Studies funding							10000
Total dollars							348,000

Forest District Summary

Activities	Treatment Area Goals (ha)					Plan 2001/02	
Stand Tending	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	2240	2240	2240	2270	2300	36.77	82365
Spacing	2255	2285	2315	2345	2345	1192.46	2689000
Pruning	466	566	666	666	666	1523.61	710000
Fertilizing	0	0	0	0	0	0.00	0
Other	2	0	0	0	0	0.00	0
Totals hectares	4963	5091	5221	5281	5311	701.46	3,481,365
Planning and prescriptions							205000
Total dollars							3,686,365

Forest Health Enhancement

	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Spacing	0	0	0	0	0	0.00	0
Pruning	0	0	0	0	0	0.00	0
Other treatments	1000	1000	1000	1000	1000	150.00	150000
Totals hectares	1000	1000	1000	1000	1000	150.00	150,000

Habitat Supply and Biodiversity Enhancement

	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Treatments	0	0	0	0	0	0.00	0

Domestic Range

	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Treatments	0	0	0	0	0	0.00	0

Enhanced Forestry Activities - Management Unit Total

	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	2240	2240	2240	2270	2300	36.77	82,365
Spacing	2255	2285	2315	2345	2345	1,192.46	2,689,000
Pruning	466	566	666	666	666	1,523.60	710,000
Fertilizing	0	0	0	0	0	0.00	0
Other stand tending activities	1002	1000	1000	1000	1000	149.70	150000
Totals hectares	5963	5091	5221	5281	5311	608.98	3,631,365
Planning and prescriptions							205,000
Studies funding							75000
Total dollars							3,911,365

2.7.5.2 Backlog Program Table

Kalum TSA

Activities	**Treatment Area Goals (ha)**					**Plan 2001/02**	
Legal Obligations	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	0	0	0	0	0	0.00	0
Site preparation	0	0	0	0	0	0.00	0
Planting	0	0	0	0	0	0.00	0
Brushing	0	0	0	0	0	0.00	0
Max. density spacing	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Seed purchase	0	0	0	0	0	0.00	0
Total legal obligations							0
Backlog Reforestation							
Surveys	2154	2000	1000	423	400	34.96	75300
Site preparation	20	0	0	0	0	1,000.00	20000
Planting	50	0	0	0	0	700.00	35000
Brushing	352	350	250	200	100	750.00	264000
Totals hectares	2576	2350	1250	623	500	153.07	394,300
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning dollars							0
Total backlog reforestation							394,300
Impeded areas							
Surveys	2350	1500	1000	350	350	35.00	82250
Brushing	411	200	100	30	30	749.39	308000
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	2761	1700	1100	380	380	141.34	390,250
Prescriptions and planning dollars							25,000
Total impeded areas							415,250
Site Restoration							
Fill planting	0	0	0	0	0	0.00	0
Rehabilitation	0	0	0	0	0	0.00	0
Reforestation	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning dollars							0
Total site restoration							0
Backlog Program Activities - Management Unit Total							
Surveys	4504	3500	2000	773	750	34.98	157550
Site preparation	20	0	0	0	0	999.90	20000
Planting	50	0	0	0	0	699.96	35000
Brushing	763	550	350	230	130	749.67	572000
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	5337	4050	2350	1003	880	147.00	784550
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning							25,000
Recommended studies							0
Total backlog program							809,550

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

TFL 1

Activities	**Treatment Area Goals (ha)**					**Plan 2001/02**	
Legal Obligations	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	0	0	0	0	0	0.00	0
Site preparation	0	0	0	0	0	0.00	0
Planting	0	0	0	0	0	0.00	0
Brushing	0	0	0	0	0	0.00	0
Max. density spacing	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Seed purchase	0	0	0	0	0	0.00	0
Total legal obligations							0
Backlog Reforestation							
Surveys	3500	2900	2500	2500	2400	41.43	145000
Site preparation	0	0	0	0	0	0.00	0
Planting	90	60	20	15	0	833.33	75000
Brushing	130	130	130	100	50	851.00	110630
Totals hectares	3720	3090	2650	2615	2450	88.88	330,630
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning dollars							0
Total backlog reforestation							330,630
Impeded areas							
Surveys	0	0	0	0	0	0.00	0
Brushing	0	0	0	0	0	0.00	0
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Prescriptions and planning dollars							0
Total impeded areas							0
Site Restoration							
Fill planting	0	0	0	0	0	0.00	0
Rehabilitation	0	0	0	0	0	0.00	0
Reforestation	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning dollars							0
Total site restoration							0
Backlog Program Activities - Management Unit Total							
Surveys	3500	2900	2500	2500	2400	41.43	145000
Site preparation	0	0	0	0	0	0.00	0
Planting	90	60	20	15	0	833.31	75000
Brushing	130	130	130	100	50	850.99	110630
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	3720	3090	2650	2615	2450	88.88	330630
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning							0
Recommended studies							0
Total backlog program							330,630

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

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Activities	**Treatment Area Goals (ha)**					**Plan 2001/02**	
Legal Obligations	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	100	100	100	100	0	46.00	4600
Site preparation	0	0	0	0	0	0.00	0
Planting	25	25	0	0	0	1,080.00	27000
Brushing	20	20	20	20	20	750.00	15000
Max. density spacing	0	0	0	0	0	0.00	0
Totals hectares	145	145	120	120	20	321.37	46,600
Seed purchase	27000	27000	0	0	0	0.37	10000
Total legal obligations							56,600
Backlog Reforestation							
Surveys	0	0	0	0	0	0.00	0
Site preparation	0	0	0	0	0	0.00	0
Planting	0	0	0	0	0	0.00	0
Brushing	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning dollars							0
Total backlog reforestation							0
Impeded areas							
Surveys	0	0	0	0	0	0.00	0
Brushing	50	50	20	0	0	700.00	35000
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	50	50	20	0	0	699.97	35,000
Prescriptions and planning dollars							5,000
Total impeded areas							40,000
Site Restoration							
Fill planting	0	0	0	0	0	0.00	0
Rehabilitation	0	0	0	0	0	0.00	0
Reforestation	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning dollars							0
Total site restoration							0
Backlog Program Activities - Management Unit Total							
Surveys	100	100	100	100	0	46.00	4600
Site preparation	0	0	0	0	0	0.00	0
Planting	25	25	0	0	0	1,079.87	27000
Brushing	70	70	40	20	20	714.29	50000
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	195	195	140	120	20	418.44	81600
Seed purchase	27000	27000	0	0	0	0.37	10000
Prescriptions and planning							5,000
Recommended studies							0
Total backlog program							96,600

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

Forest District Summary

Activities	**Treatment Area Goals (ha)**					**Plan 2001/02**	
Legal Obligations	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	100	100	100	100	0	46.00	4600
Site preparation	0	0	0	0	0	0.00	0
Planting	25	25	0	0	0	1,079.91	27000
Brushing	20	20	20	20	20	749.93	15000
Max. density spacing	0	0	0	0	0	0.00	0
Totals hectares	145	145	120	120	20	321.35	46,600
Seed purchase	27000	27000	0	0	0		10000
Total legal obligations							56,600
Backlog Reforestation							
Surveys	5654	4900	3500	2923	2800	38.96	220300
Site preparation	20	0	0	0	0	999.90	20000
Planting	140	60	20	15	0	785.71	110000
Brushing	482	480	380	300	150	777.24	374630
Totals hectares	6296	5440	3900	3238	2950	115.14	724,930
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning dollars							0
Total backlog reforestation							724,930
Impeded areas							
Surveys	2350	1500	1000	350	350	35.00	82250
Brushing	461	250	120	30	30	744.03	343000
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	2811	1750	1120	380	380	151.28	425,250
Prescriptions and planning dollars							30000
Total impeded areas							455,250
Site Restoration							
Fill planting	0	0	0	0	0	0.00	0
Rehabilitation	0	0	0	0	0	0.00	0
Reforestation	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning dollars							0
Total site restoration							0
Backlog Program Activities - Management Unit Total							
Surveys	8104	6500	4600	3373	3150	37.90	307150
Site preparation	20	0	0	0	0	999.60	20000
Planting	165	85	20	15	0	830.26	137000
Brushing	963	750	520	350	200	760.78	732630
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	9252	7335	5140	3738	3350	129.35	1196780
Seed purchase	27000	27000	0	0	0	0.37	10000
Prescriptions and planning							30,000
Recommended studies							0
Total backlog program							1,236,780

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

2.7.5.3 Performance Measures Based on Activities Planned for 2001/2002

Kalum TSA

	Performance Measure	Tree Improve-ment	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A	**Planned treatment area (ha) in 2001/2002**	50	0	2,146	20	50	763	1,295	166	0	5,490	
1.0	**Timber Supply**											
1.1	Potential volume/ha gain (m3/ha/yr)	0.34	0	0.25	0	1.9	0.25	0	0	0.40		
1.2	Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3	Pot. tot. merch. vol. increment in 65 yrs (m3)	1,105	0	34,878	0	6,175	12,399	0	0	0		**54,557**
1.4	Est. yrs reduced to achieve mngt objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4	Est. area that will be reclass. as stocked (ha)			0								**0**
1.5	Est. area declared as free growing (ha)			0								**0**
2.0	**Wood Value**											
2.1	Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0	**Employment**											
3.1	Estimated short term employment (person days/ha)	0.1	0.34	0.1	0.95	2	2.61	3.96	4.54	0.18	0.1	
3.2	Estimated total employment (person days/year)	5	0	215	19	100	1,991	5,128	754	0	549	
3.3	Estimated total full time equivalent positions (FTE)	0	0	1	0	1	11	28	4	0	3	**49**
4.1	**Forest Health Enhancement (ha)**											**1,000**
5.1	**Habitat Supply**											
5.2	Planned area for specific wildlife forage or habitat creation in 2001/2002 (ha)											**0**
5.3	Est. area with secondary value provided to biodiversity (ha)											**0**

TFL 1

	Performance Measure	Tree Improvement	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A	**Planned treatment area (ha) in 2001/2002**	90	0	1,155	0	90	130	750	300	0	2,515	
1.0	**Timber Supply**											
1.1	Potential volume/ha gain (m3/ha/yr)	0.34	0	0.25	0	1.9	0.25	0	0	0.40		
1.2	Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3	Pot. tot. merch. vol. increment in 65 yrs (m3)	1,989	0	18,769	0	11,115	2,113	0	0	0		**33,986**
1.4	Est. yrs reduced to achieve mngt objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4	Est. area that will be reclass. as stocked (ha)			0								**0**
1.5	Est. area declared as free growing (ha)			0								**0**
2.0	**Wood Value**											
2.1	Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0	**Employment**											
3.1	Estimated short term employment (person days/ha)	0.1	0.34	0.1	0.95	2	2.61	3.96	4.54	0.18	0.1	
3.2	Estimated total employment (person days/year)	9	0	116	0	180	339	2,970	1,362	0	252	
3.3	Estimated total full time equivalent positions (FTE)	0	0	1	0	1	2	17	8	0	1	**29**
4.1	**Forest Health Enhancement (ha)**											**0**
5.1	**Habitat Supply**											
5.2	Planned area for specific wildlife forage or habitat creation in 2001/2002 (ha)											**0**
5.3	Est. area with secondary value provided to biodiversity (ha)											**0**

TFL 41

	Performance Measure	Tree Improvement	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A	**Planned treatment area (ha) in 2001/2002**	25	0	112	0	25	70	210	0	0	444	
1.0	**Timber Supply**											
1.1	Potential volume/ha gain (m3/ha/yr)	0.34	0	0.25	0	1.9	0.25	0	0	0.40		
1.2	Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3	Pot. tot. merch. vol. increment in 65 yrs (m3)	553	0	1,823	0	3,088	1,138	0	0	0		6,601
1.4	Est. yrs reduced to achieve mngt objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4	Est. area that will be reclass. as stocked (ha)			0								0
1.5	Est. area declared as free growing (ha)			0								0
2.0	**Wood Value**											
2.1	Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0	**Employment**											
3.1	Estimated short term employment (person days/ha)	0.1	0.34	0.1	0.95	2	2.61	3.96	4.54	0.18	0.1	
3.2	Estimated total employment (person days/year)	3	0	11	0	50	183	832	0	0	44	
3.3	Estimated total full time equivalent positions (FTE)	0	0	0	0	0	1	5	0	0	0	6
4.1	**Forest Health Enhancement (ha)**											0
5.1	**Habitat Supply**											
5.2	Planned area for specific wildlife forage or habitat creation in 2001/2002 (ha)											0
5.3	Est. area with secondary value provided to biodiversity (ha)											0

Forest District Summary

	Performance Measure	Tree Improve-ment	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A	**Planned treatment area (ha) in 2001/2002**	165	0	3,414	20	165	963	2,255	466	0	8,450	
1.0	**Timber Supply**											
1.1	Potential volume/ha gain (m3/ha/yr)	0.34	0	0.25	0	1.9	0.25	0	0	0.40		
1.2	Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3	Pot. tot. merch. vol. increment in 65 yrs (m3)	3,647	0	55,470	0	20,379	15,649	0	0	0		95,144
1.4	Est. yrs reduced to achieve mngt objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4	Est. area that will be reclass. as stocked (ha)			0								0
1.5	Est. area declared as free growing (ha)			0								0
2.0	**Wood Value**											
2.1	Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0	**Employment**											
3.1	Estimated short term employment (person days/ha)	0.1	0.34	0.1	0.95	2	2.61	3.96	4.54	0.18	0.1	
3.2	Estimated total employment (person days/year)	17	0	341	19	330	2,513	8,930	2,116	0	845	
3.3	Estimated total full time equivalent positions (FTE)	0	0	2	0	2	14	50	12	0	5	84
4.1	**Forest Health Enhancement (ha)**											1,000
5.1	**Habitat Supply**											
5.2	Planned area for specific wildlife forage or habitat creation in 2001/2002 (ha)											0
5.3	Est. area with secondary value provided to biodiversity (ha)											0

2.7.5.4 Studies Table

TFL 1

Rank	Project Name	FRBC's Cost 2001/2002
	Vole repellant study -- Predator urine and its ability to deter small mammals from damaging seedlings.	$20000
1	Long term vegetation study (shared with TSA)-- Monitoring the effects of repeated manual brushing on tree growth and brush species.	$45000

TFL 41

Rank	Project Name	FRBC's Cost 2001/2002
1	Fertilization trials--Evaluating growth response to fertilization.	$10000

District Summary

Rank	Project Name	FRBC's Cost 2001/2002
	Long term vegetation study	$45000
	Vole repellant study	$20000
	Fertilization trial	$10000
	TOTAL	$75000

2.7.5.5 Kalum Forest District Summary Table

Kalum TSA--Woodlot information is not included in this section.

	Treatment Area Goals (ha)					Plan 2001/02	
	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	4,461	3,461	3,461	3,461	3,461	421	1,875,865
Planning, prescriptions and seedlings							39,000
Backlog Program Field Activities	5,337	4,050	2,350	1,003	880	147	784,550
Planning, prescriptions and seedlings							25,000
Totals	9,798	7,511	5,811	4,464	4,341		2,724,415

Performance Measures

Potential total merchentable volume increment in 65 years	54,557 m^3
Estimated ha that will be reclassified as stocked	0 ha
Estimated ha that will be declared as free growing	0 ha
Estimated total full time equivalent positions generated	49 FTEs
Forest health enhancement area	1,000 ha
Planned area for specific wildlife forage or habitat creation	0 ha
Estimated area with secondary value provided to biodiversity	0 ha

TFL 1

	Treatment Area Goals (ha)					Plan 2001/02	
	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	1,050	1,150	1,250	1,250	1,250	1,421	1,492,500
Planning, prescriptions and seedlings							156,000
Backlog Program Field Activities	3,720	3,090	2,650	2,615	2,450	89	330,630
Planning, prescriptions and seedlings							0
Totals	4,770	4,240	3,900	3,865	3,700		1,979,130

Performance Measures

Potential total merchentable volume increment in 65 years	33,986 m^3
Estimated ha that will be reclassified as stocked	0 ha
Estimated ha that will be declared as free growing	0 ha
Estimated total full time equivalent positions generated	29 FTEs
Forest health enhancement area	0 ha
Planned area for specific wildlife forage or habitat creation	0 ha
Estimated area with secondary value provided to biodiversity	0 ha

TFL 41

	Treatment Area Goals (ha)					Plan 2001/02	
	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	452	480	510	570	600	582	263,000
Planning, prescriptions and seedlings							85,000
Backlog Program Field Activities	195	195	140	120	20	418	81,600
Planning, prescriptions and seedlings							15,000
Totals	647	675	650	690	620		444,600

Performance Measures	
Potential total merchentable volume increment in 65 years	6,601 m^3
Estimated ha that will be reclassified as stocked	0 ha
Estimated ha that will be declared as free growing	0 ha
Estimated total full time equivalent positions generated	6 FTEs
Forest health enhancement area	0 ha
Planned area for specific wildlife forage or habitat creation	0 ha
Estimated area with secondary value provided to biodiversity	0 ha

Forest District Summary

	Treatment Area Goals (ha)					Plan 2001/02	
	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	5,963	5,091	5,221	5,281	5,311	609	3,631,365
Planning, prescriptions and seedlings							280,000
Backlog Program Field Activities	9,252	7,335	5,140	3,738	3,350	129	1,196,780
Planning, prescriptions and seedlings							40,000
Totals	15,215	12,426	10,361	9,019	8,661		5,148,145

Performance Measures

Potential total merchantable volume increment in 65 years	95,144 m^3
Estimated ha that will be reclassified as stocked	0 ha
Estimated ha that will be declared as free growing	0 ha
Estimated total full time equivalent positions generated	84 FTEs
Forest health enhancement area	1,000 ha
Planned area for specific wildlife forage or habitat creation	0 ha
Estimated area with secondary value provided to biodiversity	0 ha

2.7.5.6 Woodlot Program Table

There are four active woodlot licenses in the Kalum Forest District. Since there is no backlog land on these woodlots and no areas that have been declared 'Free to Grow', the woodlot program does not require funding for silviculture work.

2.8 North Coast Forest District

2.8.1 Basic Data

The North Coast Timber Supply Area (TSA) and a portion of Tree Farm License (TFL) 25 (Block 5) are within the North Coast Forest District (DNC). Basic data for the North Coast TSA and TFL 25 (Block 5) follows.

Land Area

Description	Area (ha)	Area (%)
Total Area of TSA	1,955,900	100
Total Productive Crown Forest	758,800	39
Net Timber Harvest Land Base (THLB)	119,130	6

Source: 1999 TS analysis report-rounded to nearest 100 ha.

Description	Area (ha)	Area (%)
Total Area of TFL	311,650	100
Net Timber Harvest Land Base (THLB)	48,385	15.5

Source: Management Plan 10

TSA Annual Allowable Cut (AAC)

AAC Type	TSR1 (m^3)	TSR2* (m^3)	Change (%)
Conventional	600,000	600,000	0.0
Deciduous			
Insect/Disease			
Marginal			
Total	600,000	600,000	0.0
Woodlot AAC			

*Effective November 1999 prior to determination.

According to the North Coast Timber Supply Area Analysis Report (1999), International Forest Products Ltd. (Interfor) has the largest licence with 37.8% of the total available AAC. West Fraser Mills Ltd. (West Fraser) has the second largest licence at 26.9% of the AAC. Thomson Industries Ltd. has the next largest licence at 5.1% followed by Boyle & Dean Logging Ltd. which has 3.4% of the total AAC. The Small Business Forest Enterprise Program has been allocated 24.8% and the Forest Service Reserve (1.0%) and other licences (1.0%) comprise the remaining cut. Another source of timber and employment in the District is Western Forest Products' TFL 25 (Block 5) with an AAC of approximately 255,000 cubic metres per year.

Under current management assumptions, the 1999 Timber Supply Review (TSR 2) indicates that the current harvest level of 600,000 cubic metres per year can be maintained for another two decades, followed by a 10% decline per decade for seven decades to a long-term harvest level of 361,000 cubic metres per year.

Site Class Profile (site index ht (m) above dbh at 50 years)

Classes*	<15	15-22	22<
North Coast TSA	29%	65%	6%
TFL25 (Block 5)	20%	68%	11%

*TSA based on North Coast Timber Supply Review (1999), TFL based on Management Plan 10.

Age Class

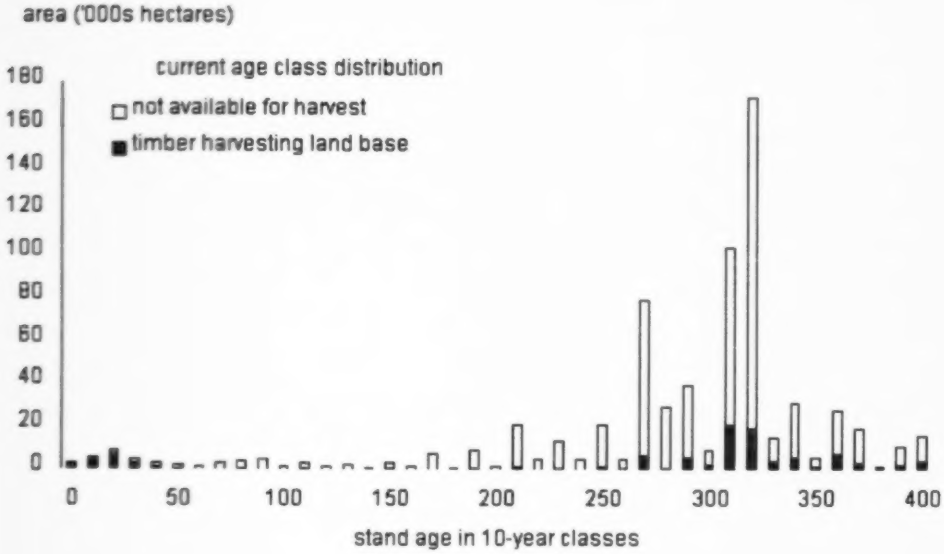

Figure--Current age class distribution — North Coast TSA productive forest land base, 1999.

In Block 5 of TFL 25, 9% of the operable working forest is 0 to 80 years old and the remaining forest is over 140 years old.

Tree Species Profile

In the TSA, Western hemlock or amabilis fir-leading stands and western red cedar stands dominate the timber harvesting land base at 53% and 40%, respectively. The remainder of the timber harvesting land base is covered by spruce-leading and cottonwood-leading stands at 7% and <0.5%, respectively.

In Block 5 of TFL 25, red and yellow cedar stands dominate the timber harvesting land base at 42% followed by western hemlock at 36%, balsam at 18%, and spruce and deciduous stands at 2% each.

Incremental Silviculture History

Incremental silviculture history for the DNC includes spacing, pruning, and fertilizing.

- To date, fertilization has only been used for site rehabilitation projects. No operational fertilization has occurred to provide for incremental growth.
- DNC first started pruning in 1991 with a 16 ha project. Since then, some pruning has occurred in 5 of the last 7 years. To date we have 226.5 ha of pruning recorded on ISIS (or about 28 ha/year). In fiscal 2000/2001, WFP has proposed completing 118 ha.
- DNC's first recorded spacing project was completed in 1980, however the program did not fully get off the ground until 1985. To the end of fiscal year 1998/1999 DNC completed 2,708 ha of spacing or approximately 193 ha/year. In fiscal 2000/2001, Interfor and West Fraser have proposed completing 140 ha. TSR 2 has based its growth assumptions on 200 ha of incremental spacing per year.

2.8.2 Issues

A variety of plans are applicable to the District and to the TSA. These plans have been reviewed for commitments, recommendations and opportunities that will address issues and investment needs that are applicable to this RMP for the land based programs.

Presently, woodlot AAC contribution is 0%. The North Coast District is presently in the final stages of approving its first Woodlot Licence agreement. Due to the infancy of the Woodlot Program, (all area is presently wooded) no silviculture strategy exists. Tenure holders of woodlots have basic obligations until "Free Growing".

Summary and Conclusions of the Timber Supply Analysis

The results of this timber supply analysis suggest that the current allowable harvest level in the North Coast TSA of 600,000 cubic metres per year can be maintained for up to 20 years without either requiring substantial and rapid future harvest level reductions, or creating severe future timber disruptions. Using current inventory and timber growth information and assuming continuation of current forest management practices, harvests could be maintained at the current level for 20 years, if followed by a series of 10% reductions over the subsequent 40-year period, to a long-term harvest level of 361,000 cubic metres per year. This timber supply forecast is somewhat lower than the forecast in the previous (1994) analysis, in which the current allowable annual cut could be maintained for 60 years. The primary reason for the change is a re-inventory that covered most of the TSA, which resulted in a decrease of almost 17% in the estimate of the standing timber volume on the timber harvesting land base.

Other factors leading to the decrease in the projected timber supply are the use of a managed stand growth and yield model (which was not available for the previous analysis) for projecting growth of managed, regenerated stands, and different criteria for defining when stands are likely to become merchantable. Together, these factors led to a higher long-term level, but also to longer minimum harvestable ages, which extended the length of time over which existing older stands must support harvests, relative to the 1994 analysis.

The base case results described above reflect current knowledge and information on forest inventory, growth and management. However, uncertainty exists about several factors important in defining timber supply. A series of sensitivity analyses showed that these uncertainties affect timber supply in varying degrees. The results for all for all sensitivity analyses are summarized in the TSR by comparing cumulative timber supply over three different time frames to base case results. The base case is particularly sensitive to changes which influence the amount of old-growth volume available, because the harvest forecast relies on harvests from old-growth stands for almost 140 years. The uncertainties with the largest potential negative effects on base case projected harvest levels over the short term (next 20 years) are estimates of timber volumes in existing stands and the size of the timber harvesting land base. A TSA-wide inventory audit was released just prior to the completion of this report. The audit results indicate a small, but not statistically significant overestimate of timber volumes in mature stands (over 60 years old) on the physically and economically operable land base. Overall, the audit therefore suggests that the inventory reasonably accurately portrays the standing timber volume in existing stands at the TSA level. No significant uncertainties regarding the size of the timber harvesting land base are apparent. A new operability classification was recently completed for the TSA.

Reductions to minimum harvestable ages, and old-growth site index adjustments have the greatest potential to increase medium-term timber supply, or offset short- or medium-term timber supply reductions due to other factors.

Within the ranges of uncertainty tested, several factors were shown to have negligible effects on the base case forecast. These factors include changes to green-up periods, application of alternate landscape-level biodiversity requirements, and changes in forest cover requirements used to approximate integrated resource management (IRM) adjacency constraints.

Over the long term, that is beyond 60 years, uncertainties with the greatest potential negative impact on timber supply are reductions to the timber harvesting land base or regenerated stand yields. Results suggest that application of site index adjustments after current old-growth stands are harvested and regenerated has the potential to significantly increase long-term timber supply.

In conclusion, this analysis indicates that based on current inventory and growth and yield information, and the current management regime, timber harvests in the North Coast TSA can be maintained at the current allowable level for the next

20 years. The analysis indicates that several factors related to the current forest inventory and management regime could affect timber supply. However, except for the likelihood that site index estimates for old-growth stands under-estimate actual productivity, which affects timber supply primarily over the medium- and long-terms, there is no conclusive evidence to suggest that significant inaccuracies exist in the information used. Nevertheless, uncertainties in initial stand density estimates, and product requirements of future markets and mills - both of which affect the time at which stands will be merchantable - and in estimates of timber volumes in existing stands, result in uncertainty in the timber supply forecasts for the medium term.

Issues Addressed by the Silviculture Strategy (Type I)

While many issues were proposed and discussed in the workshop, the participants developed a silviculture strategy that addressed three key issues: protecting seedlings and young trees from damage by porcupine and deer; delaying the falldown projected for decade 3, and investigating items causing uncertainty about site productivity and the size of the timber harvesting land base (THLB).

TFL Issues

Timber Quantity

Forest policy and factors affecting harvest rates have changed since the Timber Supply Analysis supporting the TFL 25 annual allowable cut was completed. There have been new operational constraints as a result of the implementation of the Forest Practices Code, new planning processes or Plans (CCLRMP and VILUP) and new policies such as the Identified Wildlife Management Strategy and Landscape Unit Planning. Block 5 is subject to the CCLRMP processes and is also impacted by the ongoing Coastal Forest Conservation Initiative. It is anticipated that these new factors will put downward pressure on the upcoming AAC.

The TFL 25 Management Plan 10 Timber Supply analysis is near completion. This analysis will incorporate these constraints as well as spatial model development. Advances in inventories and modeling procedures are also expected to influence future analyses. The previous Management Plans projected the following for Block 5:

The harvest is 255,000 cubic metres per year declining to a LRSY of 212,000 cubic metres per year in decade two. Block 5 is subject to the CCLRMP.

Timber Quality

The last Timber Supply Analysis projected that the bulk of the harvest in the short-term, mid-term will continue to come from old growth forest. Past that point, harvest will be dominated by second growth. If projected rotations do not allow time for the development of quality characteristics such as small knots, clear wood and mature fibre, there could be a reduction in stand value not only on a cubic meter basis but also on a per hectare basis.

WFP's growth and yield work indicates that rotations can be extended without a significant impact on LRSY MAI. For TFL 6, which has similar ecosystems, WFP has adopted an average rotation of 104 years. This rotation will produce stands with an average diameter in the 40 to 45 cm dbh range.

A timber quality analysis produced for the last TFL 25 Management Plan compared second growth grades predicted by the model to produced grades from current second growth logging. The analysis indicated it was possible to produce a second growth grade profile similar to our experienced production from second growth stands if an average diameter between 35 and 45 cm was targeted.

The average TFL 6 rotation that would maximize yield (82 years) will only produce stands with an average diameter in the range of 30 to 35 cm dbh. The TFL 25 analysis confirmed that by extending rotations it would be possible to produce average diameters in the 35 to 45 cm range and improve log grades. Overall, the minor loss in quantity from a longer rotation is more than offset by an increase in future value.

The analysis concluded that when compared to longer rotations, there was little economic justification for silviculture treatments that increased second growth diameters. However, it did note that pruning would be necessary if there was a desire to produce the highest grades.

2.8.3 Opportunities to Increase Timber Supply

Unless indicated, all information in this section refers to the TSA. The more general strategies may apply to both TFL 25-Block 5 and the TSA.

Potential Strategies by Response Time Frame

Response Time Frame	Objective/Action	Anticipated Result
♦ Short Term	None.	Maintain the current harvest level.
♦ Mid Term	None.	Smooth transition to a lower LTHL.
♦ Long Term	Increase and accelerate growth of regenerated stands. Protect young stands.	Reduce the time to achieve minimum harvest age, and increase the volumes available for harvest in those stands. Maintain LTHL.

* can potentially be accomplished with FRBC funding

Potential Treatments and Analysis Results

Treatment	Comment	Treatable Area
◆ Spacing	Space to 700-1400 sph, high site index 2nd growth stands, 15-25 yr old with easy access, in areas not prone to porcupine damage.	200 ha/yr
◆ Fertilization	Time-of-planting fertilization, which has the potential to shorten time to free growing by 1-3 years; Block 5 (TFL25) has not traditionally been considered a good area to fertilize due to poor access. Establish fertilization screen trials in this area.	800 ha/yr
◆ Commercial Thinning	Pre-commercial thinning and repeated fertilizer treatments (every 15 years). Increase post-thin densities and thin stands later to mitigate porcupine damage.	Approximately 500 ha/yr could be treated in this manner. Fertilization trials to help provide this information have been included in the "To-Do" list.
◆ Rehabilitation		Few treatable areas.
◆ Current Reforestation		
◆ Backlog NSR	Alter species composition with species that are less attractive to the porcupine.	500 ha/yr
	Concentrate cedar planting where most needed to reduce protection costs.	200 ha/yr
	All backlog assumed treated within next 10 years. No additional opportunity.	

* can potentially be accomplished with FRBC funding

Other Potential Strategies

Protect young stands from porcupine damage. Porcupine affect young stands by feeding on the bark, often girdling trees. Some proposed strategies to deal with porcupine damage include:

- Create dispersed patterns of small cutblocks (porcupine populations are believed to be positively affected by opening size; larger disturbed areas are believed to stimulate population growth).
- Reduce den habitat (see also "To-Do" list) with various practices, including burning or re-distributing slash piles, and avoiding creation of slash piles.
- Direct population control.

Protect young stands from deer browsing. Maintaining the desired composition of cedar on the landbase after harvesting is dramatically affected by deer browsing on young seedlings. The following strategies have been proposed to help maintain a cedar component on the landscape in the presence of deer:

- Use seedling protection such as mesh tubes and cones; utilize existing obstacles (slash/stumps) to inhibit access to individual trees.
- Create dispersed patterns of small cutblocks (deer populations are believed to be positively affected by opening size; within limits, larger disturbed areas are believed to stimulate population growth).

- Direct population control by increasing bag limit for hunters.

With an inoperable area four times the size of the net THLB, issues and opportunities associated with operability overshadow those of silviculture. However, assuming an operability status quo, silviculture should not be ruled out as a means to improve future harvest levels.

2.8.4 Opportunities to Improve Timber Quality

While not identified in the silviculture strategy spacing, pruning and fertilization have the potential to improve timber quality by positively affecting piece size and amount of clear wood.

Potential Strategies by Response Time Frame

Response Time Frame	Strategy/Action	Anticipated Result
◆ Short Term	None – Growing stock is currently in Old Growth	
◆ Mid Term	None – Growing stock is currently in Old Growth	
◆ Long Term	Control Species, increase piece size, improve wood quality	More desirable, market niche

Potential Treatments and Analysis Results

Treatment	Comment/ Potential Treatment Regimes	Treatable Area
◆ Spacing	* potential for controlling species and increasing piece size	Currently limited, however 1980s harvest is coming on line.
◆ Commercial Thinning	Very limited suitable areas High access costs	
◆ Pruning	* Potential for increasing wood quality as above.	~ 2000 + ha
◆ Space/ Prune		
◆ Fertilization	The majority of stands contain a significant portion of hemlock which responds questionably to fertilization however, piece size could be positively affected by fertilization.	Unknown

* can potentially be accomplished with FRBC funding

Working Targets

Working targets for qualities are specific to tenure and supply area profiles, but generally are managing for high quality sawlogs and desirable species profile. As described above, the silviculture program can work towards controlling species, increasing piece size and improving wood quality.

The DNC silviculture program, including the TFL, lands works to maintain both supply and quality targets for sustainability in support of the current model or rate of cut as determined by the Chief Forester.

2.8.5 North Coast Forest District Sustainable Harvest Data

Three sets of activity tables are included, one for the North Coast TSA, TFL 25 (block 5) and one set which is cumulative totals for both (North Coast District Summaries).

2.8.5.1 Enhanced Forestry Table

North Coast TSA

Activities	**Treatment Area Goals (ha)**					**Plan 2001/02**	
Stand Tending	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	40	40	100	100	100	100.00	4000
Spacing	71	70	125	120	120	2268.73	161080
Pruning	29	20	15	15	15	2151.03	62380
Fertilizing	0	0	0	0	0	0.00	0
Other	0	0	0	0	0	0.00	0
Totals hectares	140	130	240	235	235	1624.69	227,460
Planning and prescriptions							10,000
Total dollars							237,460
Forest Health Enhancement							
Spacing	0	0	0	0	0	0.00	0
Pruning	0	0	0	0	0	0.00	0
Other treatments	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Habitat Supply and Biodiversity Enhancement							
Treatments	0	0	0	0	0	0.00	0
Domestic Range							
Treatments	0	0	0	0	0	0.00	0
Enhanced Forestry Activities - Management Unit Total							
Surveys	40	40	100	100	100	100.00	4,000
Spacing	71	70	125	120	120	2,268.70	161,080
Pruning	29	20	15	15	15	2,150.96	62,380
Fertilizing	0	0	0	0	0	0.00	0
Other stand tending activities	0	0	0	0	0	0.00	0
Totals hectares	140	130	240	235	235	1,624.63	227,460
Planning and prescriptions							10,000
Studies funding							25000
Total dollars							262,460

TFL 25 (Block 5)

Activities	**Treatment Area Goals (ha)**					**Plan 2001/02**	
Stand Tending	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	100	0	0	700	700	125.00	12500
Spacing	0	0	0	0	0	0.00	0
Pruning	70	0	0	0	0	4000.00	280000
Fertilizing	0	350	350	0	0	0.00	0
Other	0	0	0	0	0	0.00	0
Totals hectares	170	350	350	700	700	1720.56	292,500
Planning and prescriptions							3,500
Total dollars							296,000

Forest Health Enhancement

Spacing	0	0	0	0	0	0.00	0
Pruning	0	0	0	0	0	0.00	0
Other treatments	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0

Habitat Supply and Biodiversity Enhancement

Treatments	0	0	0	0	0	0.00	0

Domestic Range

Treatments	0	0	0	0	0	0.00	0

Enhanced Forestry Activities - Management Unit Total

Surveys	100	0	0	700	700	125.00	12,500
Spacing	0	0	0	0	0	0.00	0
Pruning	70	0	0	0	0	3,999.94	280,000
Fertilizing	0	350	350	0	0	0.00	0
Other stand tending activities	0	0	0	0	0	0.00	0
Totals hectares	170	350	350	700	700	1,720.51	292,500
Planning and prescriptions							3,500
Studies funding							60000
Total dollars							356,000

Norht Coast District Summary

Activities	Treatment Area Goals (ha)					Plan 2001/02	
Stand Tending	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	140	40	100	800	800	117.86	16500
Spacing	71	70	125	120	120	2268.73	161080
Pruning	99	20	15	15	15	3458.38	342380
Fertilizing	0	350	350	0	0	0.00	0
Other	0	0	0	0	0	0.00	0
Totals hectares	310	480	590	935	935	1677.28	519,960
Planning and prescriptions							13,500
Total dollars							533,460
Forest Health Enhancement							
Spacing	0	0	0	0	0	0.00	0
Pruning	0	0	0	0	0	0.00	0
Other treatments	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Habitat Supply and Biodiversity Enhancement							
Treatments	0	0	0	0	0	0.00	0
Domestic Range							
Treatments	0	0	0	0	0	0.00	0
Enhanced Forestry Activities - Management Unit Total							
Surveys	140	40	100	800	800	117.86	16,500
Spacing	71	70	125	120	120	2,268.70	161,080
Pruning	99	20	15	15	15	3,458.35	342,380
Fertilizing	0	350	350	0	0	0.00	0
Other stand tending activities	0	0	0	0	0	0.00	0
Totals hectares	310	480	590	935	935	1,677.25	519,960
Planning and prescriptions							13,500
Studies funding							85000
Total dollars							618,460

2.8.5.2 Backlog Program Table

North Coast TSA

Activities	Treatment Area Goals (ha)					Plan 2001/02	
Legal Obligations	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	0	0	0	0	0	0.00	0
Site preparation	0	0	0	0	0	0.00	0
Planting	0	0	0	0	0	0.00	0
Brushing	0	0	0	0	0	0.00	0
Max. density spacing	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Seed purchase	0	0	0	0	0	0.00	0
Total legal obligations							0
Backlog Reforestation							
Surveys	2210	2150	600	600	600	87.53	193450
Site preparation	0	0	0	0	0	0.00	0
Planting	0	0	0	0	0	0.00	0
Brushing	15	10	5	0	0	1,150.00	17250
Totals hectares	2225	2160	605	600	600	94.70	210,700
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning dollars							4,540
Total backlog reforestation							215,240
Impeded areas							
Surveys	0	0	0	0	0	0.00	0
Brushing	75	70	70	0	0	1,093.33	82000
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	75	70	70	0	0	1,093.30	82,000
Prescriptions and planning dollars							15,000
Total impeded areas							97,000
Site Restoration							
Fill planting	0	0	0	0	0	0.00	0
Rehabilitation	0	0	0	0	0	0.00	0
Reforestation	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning dollars							0
Total site restoration							0
Backlog Program Activities - Management Unit Total							
Surveys	2210	2150	600	600	600	87.53	193450
Site preparation	0	0	0	0	0	0.00	0
Planting	0	0	0	0	0	0.00	0
Brushing	90	80	75	0	0	1,102.77	99250
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	2300	2230	675	600	600	127.26	292700
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning							19,540
Recommended studies							0
Total backlog program							312,240

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

TFL 25 (Block 5)

Activities	Treatment Area Goals (ha)					Plan 2001/02	
Legal Obligations	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	0	0	0	0	0	0.00	0
Site preparation	0	0	0	0	0	0.00	0
Planting	0	0	0	0	0	0.00	0
Brushing	0	0	0	0	0	0.00	0
Max. density spacing	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Seed purchase	0	0	0	0	0	0.00	0
Total legal obligations							0
Backlog Reforestation							
Surveys	0	0	0	0	0	0.00	0
Site preparation	0	0	0	0	0	0.00	0
Planting	0	0	0	0	0	0.00	0
Brushing	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning dollars							0
Total backlog reforestation							0
Impeded areas							
Surveys	125	150	150	150	150	60.00	7500
Brushing	0	0	0	0	0	0.00	0
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	125	150	150	150	150	60.00	7,500
Prescriptions and planning dollars							6,250
Total impeded areas							13,750
Site Restoration							
Fill planting	0	0	0	0	0	0.00	0
Rehabilitation	0	0	0	0	0	0.00	0
Reforestation	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning dollars							0
Total site restoration							0
Backlog Program Activities - Management Unit Total							
Surveys	125	150	150	150	150	60.00	7500
Site preparation	0	0	0	0	0	0.00	0
Planting	0	0	0	0	0	0.00	0
Brushing	0	0	0	0	0	0.00	0
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	125	150	150	150	150	59.99	7500
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning							6,250
Recommended studies							0
Total backlog program							13,750

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

North Coast District Summary

Activities	**Treatment Area Goals (ha)**					**Plan 2001/02**	
Legal Obligations	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Surveys	0	0	0	0	0	0.00	0
Site preparation	0	0	0	0	0	0.00	0
Planting	0	0	0	0	0	0.00	0
Brushing	0	0	0	0	0	0.00	0
Max. density spacing	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Seed purchase	0	0	0	0	0	0.00	0
Total legal obligations							0
Backlog Reforestation							
Surveys	2210	2150	600	600	600	87.53	193450
Site preparation	0	0	0	0	0	0.00	0
Planting	0	0	0	0	0	0.00	0
Brushing	15	10	5	0	0	1,150.00	17250
Totals hectares	2225	2160	605	600	600	94.70	210,700
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning dollars							4,540
Total backlog reforestation							215,240
Impeded areas							
Surveys	125	150	150	150	150	60.00	7500
Brushing	75	70	70	0	0	1,093.33	82000
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	200	220	220	150	150	447.50	89,500
Prescriptions and planning dollars							21,250
Total impeded areas							110,750
Site Restoration							
Fill planting	0	0	0	0	0	0.00	0
Rehabilitation	0	0	0	0	0	0.00	0
Reforestation	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning dollars							0
Total site restoration							0
Backlog Program Activities - Management Unit Total							
Surveys	2335	2300	750	750	750	86.06	200950
Site preparation	0	0	0	0	0	0.00	0
Planting	0	0	0	0	0	0.00	0
Brushing	90	80	75	0	0	1,102.77	99250
Density spacing	0	0	0	0	0	0.00	0
Totals hectares	2425	2380	825	750	750	123.79	300200
Seed purchase	0	0	0	0	0	0.00	0
Prescriptions and planning							25,790
Recommended studies							0
Total backlog program							325,990

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

2.8.5.3 Performance Measures Based on Activities Planned for 2001/2002

North Coast TSA

	Performance Measure	Tree Improvement	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A	**Planned treatment area (ha) in 2001/2002**	0	0	743	0	0	90	71	29	0	933	
1.0	**Timber Supply**											
1.1	Potential volume/ha gain (m3/ha/yr)	0.34	0	0.25	0	1.9	0.25	0	0	0.40		
1.2	Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3	Pot. tot. merch. vol. increment in 65 yrs (m3)	0	0	12,066	0	0	1,463	0	0	0		**13,529**
1.4	Est. yrs reduced to achieve mngt. objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4	Est. area that will be reclass. as stocked (ha)			400								**0**
1.5	Est. area declared as free growing (ha)			1000								**0**
2.0	**Wood Value**											
2.1	Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0	**Employment**											
3.1	Estimated short term employment (person days/ha)	0.1	0.34	0.1	.95	2	2.61	5	5	0.18	0.1	
3.2	Estimated total employment (person days/year)	0	0	74	0	0	235	355	145	0	93	
3.3	Estimated total full time equivalent positions (FTE)	0	0	0	0	0	1	2	1	0	1	**5**
4.1	**Forest Health Enhancement (ha)**											**0**
5.1	**Habitat Supply**											
5.2	Planned area for specific wildlife forage or habitat creation in 2001/2002 (ha)											**0**
5.3	Est. area with secondary value provided to biodiversity (ha)											**0**

TFL 25 (Block 5)

Performance Measure	Tree Improvement	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A **Planned treatment area (ha) in 2001/2002**	0	0	74	0	0	0	0	70	0	144	
1.0 **Timber Supply**											
1.1 Potential volume/ha gain (m3/ha/yr)	0.34	0	0.25	0	1.9	0.25	0	0	0.40		
1.2 Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3 Pot. tot. merch. vol. increment in 65 yrs (m3)	0	0	1,207	0	0	0	0	0	0		**1,207**
1.4 Est. yrs reduced to achieve mngt. objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4 Est. area that will be reclass. as stocked (ha)			0								**0**
1.5 Est. area declared as free growing (ha)			0								**0**
2.0 **Wood Value**											
2.1 Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0 **Employment**											
3.1 Estimated short term employment (person days/ha)	0.1	0.34	0.1	1	2	2.61	3.96	4.54	0.18	0.1	
3.2 Estimated total employment (person days/year)	0	0	7	0	0	0	0	318	0	14	
3.3 Estimated total full time equivalent positions (FTE)	0	0	0	0	0	0	0	2	0	0	**2**
4.1 **Forest Health Enhancement (ha)**											**0**
5.1 **Habitat Supply**											
5.2 Planned area for specific wildlife forage or habitat creation in 2001/2002 (ha)											**0**
5.3 Est. area with secondary value provided to biodiversity (ha)											**0**

North Coast District Summary

Not required because pertinent information from this table is contained in the Management Unit Summary Table (District Summary).

2.8.5.4 Studies Table

North Coast TSA

Rank	Project Name	FRBC's Cost 2001/2002
1	Fertilization screening trails to determine whether there will be a benefit to stand growth from fertilization. If stand growth is improved then a follow up cost benefit analysis will be performed. It is anticipated that this project will be combined with the WFP project .	$25000

TFL 25 (Block 5)

Rank	Project Name	FRBC's Cost 2001/2002
1	Fertilization screening trails to determine whether there will be a benefit to stand growth from fertilization. If stand growth is improved then a follow up cost benefit analysis will be performed. It is anticipated that this project will be combined with the Interfor project .	$60000

North Coast District Summary

Rank	Project Name	FRBC's Cost 2001/2002
1	.Fertilization screening trails to determine whether there will be a benefit to stand growth from fertilization. If stand growth is improved then a follow up cost benefit analysis will be performed. It is anticipated that this project will be combined with the Interfor project .	$60000
2	Fertilization screening trails to determine whether there will be a benefit to stand growth from fertilization. If stand growth is improved then a follow up cost benefit analysis will be performed. It is anticipated that this project will be combined with the WFP project	$25000
	TOTAL	$85000

2.8.5.5 Management Unit Summary Table

North Coast TSA

	Treatment Area Goals (ha)					Plan 2001/02	
	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	140	130	240	235	235	1,625	227,460
Planning, prescriptions and seedlings							35,000
Backlog Program Field Activities	2,300	2,230	675	600	600	127	292,700
Planning, prescriptions and seedlings							19,540
Totals	2,440	2,360	915	835	835		574,700

Performance Measures

Potential total merchentable volume increment in 65 years	13,529 m^3
Estimated ha that will be reclassified as stocked	400 ha
Estimated ha that will be declared as free growing	1000 ha
Estimated total full time equivalent positions generated	5 FTEs
Forest health enhancement area	0 ha
Planned area for specific wildlife forage or habitat creation	0 ha
Estimated area with secondary value provided to biodiversity	0 ha

TFL 25 (Block 5)

	Treatment Area Goals (ha)					Plan 2001/02	
	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	170	350	350	700	700	1,721	292,500
Planning, prescriptions and seedlings							63,500
Backlog Program Field Activities	125	150	150	150	150	60	7,500
Planning, prescriptions and seedlings							6,250
Totals	295	500	500	850	850		369,750

Performance Measures	
Potential total merchentable volume increment in 65 years	1,207 m^3
Estimated ha that will be reclassified as stocked	0 ha
Estimated ha that will be declared as free growing	0 ha
Estimated total full time equivalent positions generated	2 FTEs
Forest health enhancement area	0 ha
Planned area for specific wildlife forage or habitat creation	0 ha
Estimated area with secondary value provided to biodiversity	0 ha

North Coast District Summary

	Treatment Area Goals (ha)					Plan 2001/02	
	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	310	480	590	935	935	1,677	519,960
Planning, prescriptions and seedlings							98,500
Backlog Program Field Activities	2,425	150	150	150	150	124	300,200
Planning, prescriptions and seedlings							25,790
Totals	2,735	630	740	1,085	1,085		944,450

Performance Measures

Potential total merchentable volume increment in 65 years	14,736 m^3
Estimated ha that will be reclassified as stocked	400 ha
Estimated ha that will be declared as free growing	1000 ha
Estimated total full time equivalent positions generated	7 FTEs
Forest health enhancement area	0 ha
Planned area for specific wildlife forage or habitat creation	0 ha
Estimated area with secondary value provided to biodiversity	0 ha

2.8.5.6 Woodlot Program Table

Presently, the woodlot program for the North Coast Forest District is in need of no silviculture funds since the only woodlot in the district is new with no backlog areas.

2.9 SH APPENDICES

A. MANAGEMENT UNIT RMP CONTACT AND SUPPORT PERSONNEL

Lakes
Sustainable harvest - **John Illes**

Morice
RMP co-ordinator - **Nick Powell**
Sustainable harvest - **Francois Ouellet**

Bulkley
RMP co-ordinator - **Bob Mitchell, (Greg Rawling)**
Sustainable harvest / forest health - **Bob Mitchell, (Bill Camenzind)**

Kispiox
RMP co-ordinator – **Lisa Hanna**
Sustainable harvest / forest health – **Chris Monnon**

Kalum
Sustainable harvest - **Art Moi/Bob Wilson**

North Coast
Sustainable harvest - **Mike Grainger**
District RMP Coordinator - **Brian Wesleyson**

Regional Office
Sustainable Harvest - **Neil Endacott**

B. REFERENCES SUPPORTING SH COMPONENT

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Kispiox Silviculture Strategy & Funding Pressures. Kispiox Forest District, Ministry of Forests, Hazelton, BC.

Land and Resources Management Plan for the Lakes Forest District. Lakes Forest District, Ministry of Forests, Burns Lake, BC.

3.0 CURRENT REFORESTATION

3.1 Regional Current Reforestation Issues and Priorities

Current Reforestation activities are those areas where activities associated with establishing a free growing stand are required. They must be areas deforested by fire, or pests from October 1st, 1987 to the present, which have not been salvage harvested and are exempt from legislative requirements of the Forest Practices Code Act (section 22(5) - conditions that may apply to a TFL/TL or section 22(6) - conditions that apply to a Forest Licence or Timber sale licence):

- reforestation of trespass areas
- reverted Forest Licence obligations since 1988
- Timber Agreement lands
- treating Forest Health areas destroyed or damaged by pests with no tenure or stumpage associated with them.

Current reforestation issues and priorities in each district are described below.

Lakes Forest District

Activities have been identified to reforest and tend areas that have been denuded by current fire and pests. Of particular concerns are: hard pine rusts; needle diseases; and bark beetle attacked areas that haven't been salvaged logged (ie. have no tenure or stumpage associated with the areas affected). Site prep, planting, brushing, max density spacing and associated surveys and prescriptions to produce free growing stands are required.

Approximately 800 hectares requiring $647,000 for Forest Health treatments and reforestation are required (these are on stands that were once free growing).

Morice Forest District

No Current Reforestation obligations are required or identified at this time.

Bulkley/Cassiar Forest District

No Current Reforestation obligations are required or identified at this time.

Kispiox FD Forest District

Management of backlog reforestation issues in the Kispiox is taking priority over current reforestation (CR) initiatives at this time. The Kispiox Forest District is not planning to pursue the implementation of CR until such time as backlog reforestation issues are addressed.

Kalum FD

No Current Reforestation obligations are required or identified at this time.

North Coast Forest District

North Coast Forest District has some obligations that fall under Sec 22(5) of the Forest Practice Code Act. A holder of a Timber Licence (B&I Resources) has folded the company, leaving outstanding free growing obligations. Approximately $29,500 is required for survey prescriptions, layout, and brushing of 143 hectares for year 2001/2002.

3.2 Forest Health General--North Coast Forest District

A Timber License holder, B & I Resources, has folded the company leaving unfinished free growing obligations. All the blocks in TO 296 located at Devon Lake and TO 901 located at Legace Bay require free growing surveys to determine status and at least 2 of the 12 blocks require brushing to attain free growing.

3.2.1 Management Objectives

The primary management objectives for current reforestation in the North Coast Forest District is to bring blocks at Devon Lake and Legace Bay to free growing.

3.2.2 Resource Values at Risk

The primary resource value at risk is the timber supply for the areas mentioned above.

3.2.3 Planned Activities

Activities	**Five-year Plan Goals (ha)**					**Annual Plan 2001/02**		
	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($)	Funding ($000)	Priority C, H, M, L
1 Planning/surveys/prescriptions	130	0	13	0	0	$80	$10,432	H
2 Site preparation	0	0	0	0	0	0	0	
3 Planting	0	0	0	0	0	0	0	
4 Brushing	13	0	0	0	0	1,465	19,050	H
5 Max. density spacing	0	0	0	0	0	0	0	
6 Studies	0	0	0	0	0	0	0	
7 Other	0	0	0	0	0	0	0	
Totals hectares	143	0	13	0	0	206	29,482	
Seedling purchase	0	0	0	0	0	0	0	
Total funding							29,482	

Priority is critical, high, moderate, low

4.0 FOREST HEALTH MAINTENANCE

4.1 Regional Forest Health Maintenance Issues and Priorities

Regional Entomology Priorities for Forest Health Maintenance Resource Management Plan

The Prince Rupert Forest Region (PRFR) has large areas of mature timber contained within the timber harvesting land base. These mature forests are susceptible to mortality from many forest health agents. The primary mortality agent in mature lodgepole pine stands is the mountain pine beetle. Recent mild winters have allowed the mountain pine beetle to reach epidemic proportions in the North-central interior of BC This includes the Lakes and Morice Forest Districts of the PRFR. Mountain pine beetles are also causing significant mortality in the Bulkley-Cassiar Forest District and some mortality in the Kalum Forest District.

Mature spruce stands are being heavily attacked throughout the PRFR by spruce beetle. The Lakes, Morice and Bulkley-Cassiar Forest Districts all have large areas of spruce beetle attack, which have greatly increased in the last two years. Subalpine fir stands are currently under attack from the western balsam bark beetle in all Districts except the North Coast.

The bark beetles are the major insect pests in mature stands of the PRFR, but there is still the need to monitor for all insect pests, as defoliators can reproduce quickly and cause mortality after a few years of feeding. The aerial overview surveys conducted every year at the regional level ensure that any new insect infestations are noted, so that the causal agent can be identified to allow management options to be developed. In addition to the overview surveys, it is essential that Districts conduct detailed aerial surveys to pinpoint infestation centers. This enables proper planning of harvesting and other activities to take place.

Regional Pathology Priorities for Forest Health Maintenance Resource Management Plan

The Prince Rupert Forest Region has very diverse forests from very wet coastal western hemlock to dry central interior lodgepole pine. Tree diseases play a significant role in the successional patterns of these diverse forests. The wide variety of forest types corresponds to a wide variety of tree diseases. Lodgepole pine forests in the eastern portion of the region suffer losses to disease primarily in the younger stages of stand development. Hard pine stem rusts are a major disease concern in young pine stands. Hybrid spruce dominated stands east of the Coastal Western Hemlock zone suffer considerable losses to Tomentosus root disease, the most prevalent root disease throughout the region. Young, intensively managed hemlock stands in the Kalum District are affected by Annosus root disease. As a result of the diversity of forests, each Forest District in the PRFR has its own unique priorities regarding forest disease management.

The following table outlines the main priorities for Forest Health Research (Pathology) and Operation treatments as of the year 2000.

Topic Forest Pest	Priority	Issue	Scope	Specific Question
Pests of Intensively Managed Stands	High	Impact of pests on timber supply in stands that have received large investments	High productivity coastal forests	Extent of Annosus root disease in Kitimat Valley Investigate Amabilis fir decline in Kalum
Tomentosus Root Disease (*Inonotus tomentosus*)	High.	maintenance of Nichyeskwa Creek Tomentosus Mngt trial	Central Interior	Root disease management options
Porcupines (*Erithizon dorsatum*)	High	Impact on timber supply in Kalum and North Coast Districts	Coastal	Landscape level incidence Operational adjustment factors for TS reviews
Foliar Diseases	High	Impact on stands and possibility of plantation failures	Interior	What proportion of stands will succumb to these diseases
Dwarf mistletoes (*Arceuthobium americanum, A. tsugense*)	Med	Impact in Lakes and Morice (Pl) and in Kalum and North Coast (Hw)	North half of Province	landscape level incidence by TSA Long term loss estimates spread rates within stands
Decays	Med	Decay waste and breakage factors re-visited Scarring associated with partial harvests	Province Wide	confirmation of existing volume reductions associated with pathological indicators
Brown Cubical Decays (*Phaeoleus schweinitzii, Fomitopsis pinicola*)	Med	Impact on timber supply throughout region	Central Interior	landscape level incidence by TSA, Long term loss estimates, hazard and risk assessments for stands

The Forest Health Information Sub-program provides both a current account of the incidence and distribution of Forest Health factors as well as estimates of the long-term impacts of those factors. Impact assessments are necessary for accurate projections of forest productivity in Timber Supply Reviews. The magnitude of pest impacts can also be used as a rationale for more proactive treatments of forest health agents. Treatments, such as breeding for rust resistant seedlings, for example, could have a positive effect on timber supply.

Forest Health Inventories are essential for determining long term trends in the activities of forest health factors. The Forest Health Information Sub-program can potentially provide information on relationships between ecological factors and forest pests. This information is required to determine the hazard and risk rating of stands to various forest health factors.

4.2 Regional Issues and Priorities

Although much of the forest health maintenance program is conducted at the district level, some activities, like impact analyses, trial re-measurements, hazard and risk assessments, and overview flights are led by regional staff.

4.2.1 Protection of Current Inventory Sub-program

4.2.2 Forest Health Information Sub-program

		Five-year Plan Goals					Annual Plan 2001/02		
Activities	Units	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($)	Funding ($)	Priority C, H, M, L
1 Ground Survey	ha	0	0	0	0	0	$0	$0	
Totals hectares		0	0	0	0	0			
2 Aerial Survey - overview*	hrs flying time	80	80	80	80	80	$500/hr	40,000	C
Studies/ Operational Trials:									
3 · Hazard and risk	number	1	1	1	1	1	15,000	15,000	C
4 · Impact analyses (G&Y)	number	1	1	1	1	1	30,000	30,000	C
5 · Treatments	number	0	0	0	0	0	0	0	
6 Training Courses	number	0	0	0	0	0	0	0	
7 Other (trial re-measurements)		1	1	1	1	1	25,000	25,000	C
Totals		83	83	83	83	83	$70,000	$110,000	

Priority is critical, high, moderate, low

4.3 Lakes Forest District Issues and Priorities

The District has undergone a significant increase in Mountain Pine Beetle Activity over the last three years with each succeeding year seeing as much as a 100% increase over the previous year. The main incidence of mountain pine beetle is found south of Ootsa Lake where approximately 600,000 cubic metres of sanitation and salvage harvesting will be happening this year. There is also a growing incidence in the landbase north of Ootsa Lake and south of Cheslatta Lake/River and in the Sutherland Valley. There is approximately 250,000 cubic metres of sanitation harvesting occurring in the North Ootsa Area and over 100,000 cubic metres of sanitation harvesting occurring in the Sutherland Valley. This year a rapid escalation of Spruce beetle was seen in the district. Initial estimates are 500,000 trees or 350,000 cubic metres. The logging year (from September 2000 to August 2001) is expected to see 1.5 million cubic metres of sanitation and salvage harvesting taking place.

The district staff work together with the licensees in the district including the small business community (and program) to design the beetle control program and sanitation and salvage harvest. Credit must be given to the five major licensees, woodlot holders and small business tenure holders who, because of their hard work and the coordination between themselves and the ministry of forests, had considerably reduced the damaging potential of forest health situation.

Along with salvage or sanitation harvesting, a program of fall and burn treatments, MSMA treatments and pheromone baiting will be required to adequately control the spread of the insects. Because of the extent of the infestation south of Ootsa Lake it was decided to use these activities north of Ootsa Lake. It is thought that the south Ootsa area would benefit little from these control measures.

To completely manage the risk of spread in the Lakes TSA north of Ootsa Lake, it is calculated that a total of 35,000 trees must be fall and burned and a total MSMA treatment of 8,000 trees must be undertaken. Due to time constraints and budget constraints, it was felt that the minimum level of these program to manage the risk at an acceptable level will be 20,000 trees to be fall and burned and 8,000 trees to be MSMA treated. Below this amount, it is likely that escalations of beetle infested trees will continue to increase in the neighbourhood of 100% to 200% over the previous year. **These values will have to be factored up by two and one half times if the district loses the ability to successfully manage a "small patch sanitation" program.**

Critical to this management program is a detection program. The Lakes TSA detects the infestation centres by aerial surveys. For the last two years the aerial surveys have included color air photos. The use of these photos has increased detection ability by eliminating some of the overview aerial surveys that were done in the past and by better managing and making more efficient the detailed aerial surveys and the ground surveys or probing. The information gathered has allowed the district to effectively manage its resources by using the right management technique in the right place. Currently, the management techniques used are sanitation/salvage harvesting, fall and burn, MSMA and bait and hold.

To prevent the spread of beetle infested trees to the point where the District and its licensees can no longer salvage the dead standing trees left in the forest the district focuses its energy on controlling the flow of the infestation and salvaging the timber that is infested. This current logging year will see the district harvest its entire AAC of 1.5 million cubic metres in the sanitation and salvage program.

4.3.1 Protection of Current Inventory Sub-program

Values at Risk

The forest resource in the Lakes District is made up of 77% lodgepole pine and 21% interior spruce. Together, these species contribute over 99% of the volume to the Lakes AAC. Beetles are targeting both of these major species.

With the magnitude of the infestation in the Lakes District most of the values associated with the forest resource are at risk.

Of special note is the Caribou migration route south of Ootsa Lake. With infestation levels approaching 90%, it is expected to drastically change this area. The change in the value for wildlife is unknown.

The spruce beetle infestations are concentrated in areas of riparian and wildlife value. Spread of this beetle can lower the value of these critical wildlife habitat areas.

The Lakes district is known for its Lakes, Scenic Areas and Recreational Values. The beetles are forcing treatment or logging to occur in scenic areas and near recreation sites; often to the point where these areas no longer hold the value they once did.

The First Nations with traditional territories in the Lakes District have expressed that their traditional territories are quickly becoming large clearcuts and that there will be no timber left for them when their treaties are settled.

There is a concern that the need for an AAC increase to harvest the beetles over the next five years may result in an extent of harvesting and in a geographic distribution of harvesting that will cause a decline in the AAC either short term temporary or in the mid term as a shortfall. With possible sanitation and salvage operations predicted to peak at 3.0 million cubic metres per year (a worst case estimate) and infested trees being as young as 40 years old, it is a serious consideration.

Management Unit Data

Some suggest using the numbers submitted in the 2000/01 Bark Beetle Allocation / Budgeting process for all five years of this plan. However, if it is expected that the activities will increase or decrease due to declining or expanding pest populations, the plan should reflect this expectation.

		Five-year Plan Goals					Annual Plan 2001/02		
Activities	Units	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($)	Funding ($)	Priority C, H, M, L
1 Ground Surveys	ha	2500	2500	2500	2500	2500	$200	$500,000	H
2 Defoliator spraying	ha	0	0	0	0	0	0	0	
3 Aerial Survey - overview	ha	250000	250000	250000	250000	250000			
4 Aerial Surveys - detailed	ha	100000	100000	100000	100000	100000			
Totals hectares		2500	2500	2500	2500	2500			
5 Aerial Survey - overview	hrs flying time	100	100	100	100	100	500	50,000	H
6 Aerial Surveys - detailed	hrs flying time	150	150	150	150	150	1,000	150,000	H
7 Fall and burn treatment	trees	35000	15000	15000	15000	15000	79	2,750,000	H
8 MSMA treatment	trees	8000	8000	8000	8000	8000	22	172,000	H
9 Pheromone baiting	trees	2000	2000	2000	2000	2000	20	40,000	H
10 Studies*	number	3	2	0	0	0	58,333	175,000	M
11 Other		0	0	0	0	0	0	0	
Totals		400253	380252	380250	380250	380250	$60,153	$3,837,000	

Priority is critical, high, moderate, low

4.3.2 Forest Health Information Sub-program

		Five-year Plan Goals					Annual Plan 2001/02		
Activities	Units	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($)	Funding ($)	Priority C, H, M, L
1 Ground Survey	ha	2500	2500	1000	1000	1000	$20	$50,000	H
Totals hectares		2500	2500	1000	1000	1000			
2 Aerial Survey - overview*	hrs flying time	0	0	0	0	0	0	0	
Studies/ Operational Trials:									
3 · Hazard and risk	number	0	0	0	0	0	0	0	
4 · Impact analyses (G&Y)	number	0	0	0	0	0	0	0	
5 · Treatments	number	0	0	0	0	0	0	0	
6 Training Courses	number	0	0	0	0	0	0	0	
7 Other		0	0	0	0	0	0	0	
Totals		5000	5000	2000	2000	2000	$20	$50,000	

Priority is critical, high, moderate, low

* - reported in this sub-program only if district has no protection of current inventory sub-program

4.4 *Morice Forest District Issues and Priorities*

Because of widespread and invasive beetle infestations in the Morice Forest District, much of the Forest Health program focuses on addressing this problem. As a result, management priorities within the Morice Forest District are as follows:

- reduce the spread and impact of both Mountain Pine Beetle and Spruce Bark Beetle within the TSA;
- minimize unsalvaged losses as a result of bark beetle attacks;
- reduce beetle populations to, and maintain them at, manageable, endemic levels.; and,
- manage landscapes in a manner which reduce both current and future stand susceptibility to bark beetle attack.

These priorities shape the following strategies, agreed to by the Vanderhoof, Lakes and Morice Forest Districts to manage mountain pine beetle (MPB) in their respective Districts (see *Three-District Mountain Pine Beetle Management Strategy -Vanderhoof, Lakes, & Morice Forest Districts* August 1999):

- Individual "District Bark Beetle Strategies" have been established outlining the processes, responsibilities and time-frames for the management of MPB, but also for spruce beetle and Douglas-fir beetle. All three Districts agree to work cooperatively to minimize the spread of bark beetles within the three Timber Supply Areas (TSAs) and from Provincial Parks and protected areas.

- Forest cover information is ranked to determine "bark beetle hazard ratings" for areas throughout each district. This process identifies the susceptibility of stands to specific bark beetles by evaluating factors such as age, site class and site index to determine areas that are most at risk to beetle attacks.

- Ministry of Forests (MoF) staff and licensees meet regularly to communicate and plan how mountain pine beetle infestations will be managed. Inter-Regional meetings are proposed for twice per year - once after sketchmapping is complete (fall) and once in mid-winter to reassess strategies and make funding adjustments as required.

- MoF staff meet with forest health staff from all surrounding districts at key times of the year to evaluate bark beetle infestations and their implications on a 'regional' level.

- Stand susceptibility and risk of beetle attack information are used to conduct district overview flights. Overview flights are the initial step in identifying beetle infestations and are conducted jointly between the MoF and local major licensees during mid-July to early August each year. Overview flights identify and locate visible infestation centres often with the aid of global positioning systems (GPS).

- The results of the overview flights are discussed at meetings in July/August. Present at these meetings are representatives from the MoF Forest Health and Small Business sections as well as representatives from all major licensees. The mapped overview flight information is used to make some preliminary decisions on responsibilities and appropriate treatment options. Delineation of responsibilities and choice of appropriate treatments follow provincial guidelines for current "Bark Beetle Management Responsibilities". All Districts will adopt strategies that are consistent for adjacent areas with similar stand susceptibility and risk.

- For preventative reasons, promote the use of large aggregate cutblocks in highly susceptible areas on a landscape level where MPB densities are currently low.
- Making joint decisions on treatment options in July/August has several benefits as opposed to waiting for the more formal process of submission, review and approval of *Forest Development Plans* and amendments. These benefits include:

1. Allows for early commencement of the planning, review, and referral process by *Small Business* and major licensees for those sites designated for harvesting.
2. Facilitates preliminary and timely decisions on choice of appropriate tenures to apply, i.e., "small scale salvage" vs. sanitation harvesting ("brood removal") of smaller or larger blocks and allows the planning process to begin.
3. Allows for planning and construction of new access for sanitation harvesting.
4. Allows the "exhibit A" clearance process to begin on those areas designated for harvesting.
5. Enables issues such as First Nations consultations, agency referrals, and forest development planning to have the best chance to be completed in time to allow harvesting to commence the winter following infestation discovery.
6. Allows ground surveys to start immediately in designated areas.
7. Allows for cost data to be collated for appraisal rate development.

- *Forest Health Assessments* can be requested by a District Manager leading to licensee submission of emergency forest development plan (FDP) amendments in September and October. These contain: bark beetle GPSed epicenters containing identification numbers, results of ground surveys, historical and proposed bark beetle harvest information, proposed treatments, and other relevant information on the sites. These data are tracked in a common data base which is used interactively by all licencees and the MoF. It is also commonly used to derive geographic information system (GIS) mapped products.
- Additional District bark beetle management strategies include:

1. Establish areas of responsibilities with Parks for management of MPB within Tweedsmuir Provincial Park and any other proposed protected areas that cross TSA boundaries.
2. Collectively fund treatment of those infestations that have the potentially greatest impact to timber supply and integrated resource management (IRM) values, regardless of District boundaries.

3. Apply single tree treatment only in inaccessible sites with low numbers of infested trees.
4. Use fall & burn & MSMA tactics where cost-efficient and otherwise appropriate.
5. Jointly develop a harvest, tracking, and milling plan and commit the MoF and licensees to meeting the objective of tracking infested timber by timber mark and ensuring it is milled before the beetle flights each year.

4.4.1 Protection of Current Inventory Sub-program

Resource Values at Risk

The most significant risk from the mountain pine beetle and other bark beetles is the potential impact to the long-term timber supply. If the current levels of infestation persist at the current rate without aggressive control measures, the long-term timber supply in this TSA will be severely impacted.

Watershed values are at risk due to the current mountain pine beetle epidemic and associated development and harvesting. The level of harvest required to manage the beetle could seriously impact the integrity of these watersheds. There are five major watersheds at risk in the Morice TSA. These watersheds include: Nanika River, Morice River, Bulkley River, Nadina River, Babine Lake and river system.

Both Mountain Pine and Spruce Bark Beetle pose risks to Parks and Proposed Protected Areas within and adjacent to the TSA. Other values at risk include: recreation values, scenic values and safety.

The Morice TSA has 71% of its net area in mature age classes (see section 2.4.1). Approximately 54% of the net land base is made up of mature pine types. Mature spruce and subalpine fir makes approximately 23% of the timber harvesting land base respectively (see section 2.4.1).

Parks and Protected Areas

Certain Parks and Proposed Protected Areas are currently being impacted or are threatened by the mountain pine and spruce bark beetle within the Morice TSA. The following Parks and Proposed Protected Areas are included in this proposal:

- North Tweedsmuir Provincial Park
- Nadina Mountain Study Area
- Burnie Lakes Study Area
- Telkwa Range Study Area
- Old Man Lake/China Nose Study Area
- Babine Lake Sites (PAS)
- Nanika/Kidprice Study Area
- Atna Lake Study Area

Bark Beetle Status

The total area of susceptible pine and spruce forest in the Morice TSA totals 389,889 ha. (includes low, moderate, high and extreme hazard types). In the year 2000, both Mountain Pine and Spruce beetle are occurring throughout the TSA in epidemic proportions.

The numbers of detected red pine and spruce trees have risen significantly over the past two years. This is mainly a result of the mild winters the northwest has experienced since 1996 (Fig. 1). As a result, the MSMA program will be expanded this year to treat inoperable or inaccessible areas to minimize our cost per tree (Fig. 2). Operable and accessible infestations that are less than one hectare in size will be addressed by small patch harvest and minor salvage (Fig. 3).

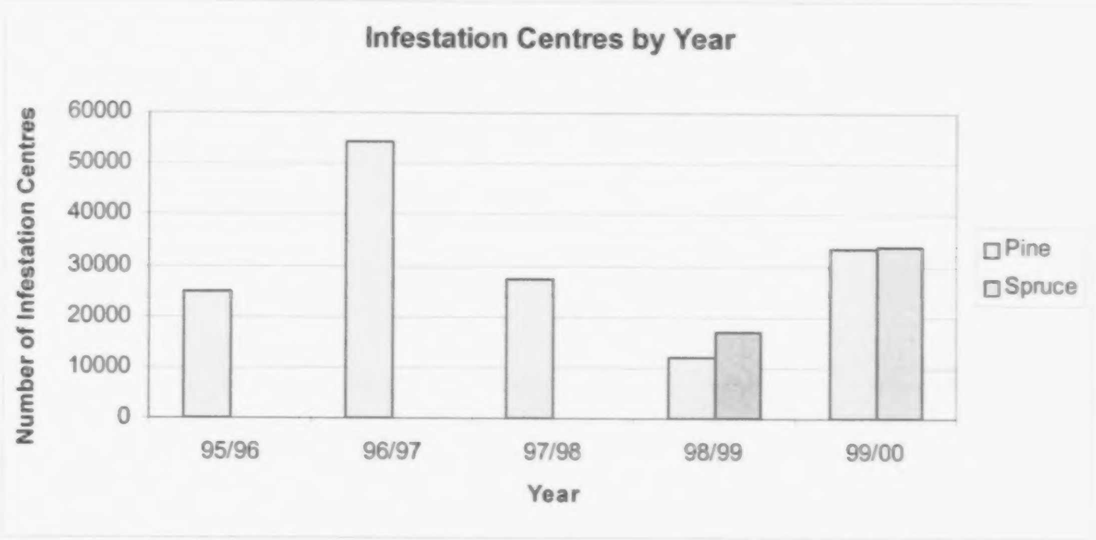

Fig. 1--The number of infestation centres observed over the last five years.

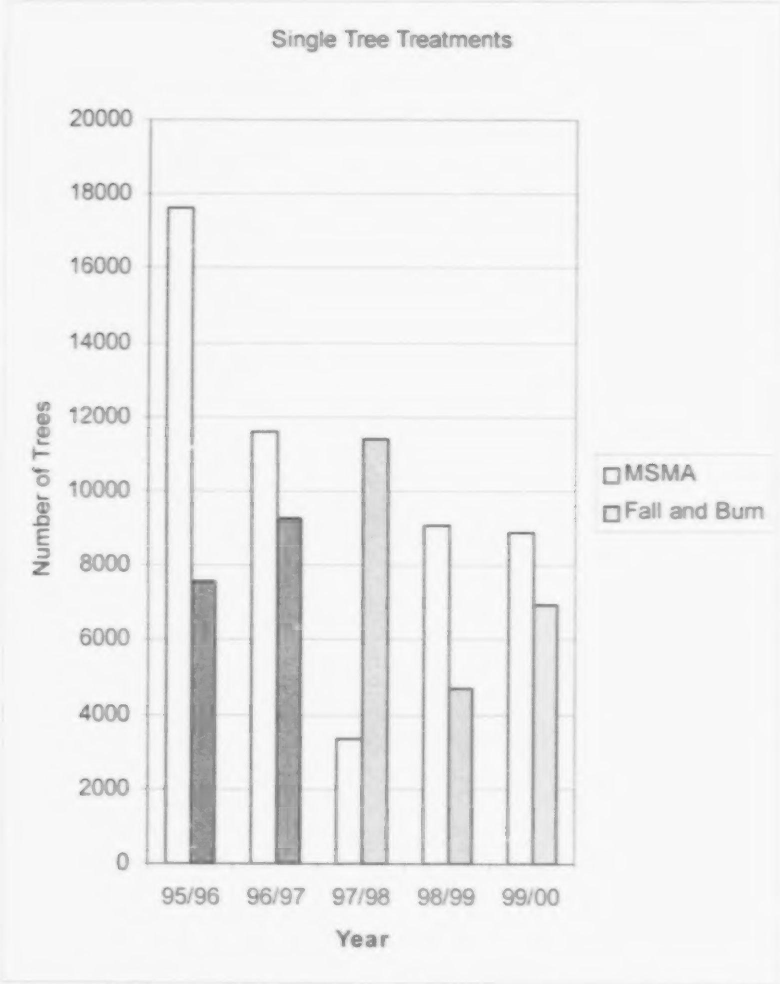

Fig. 2--The number of single tree treatments over the last five years.

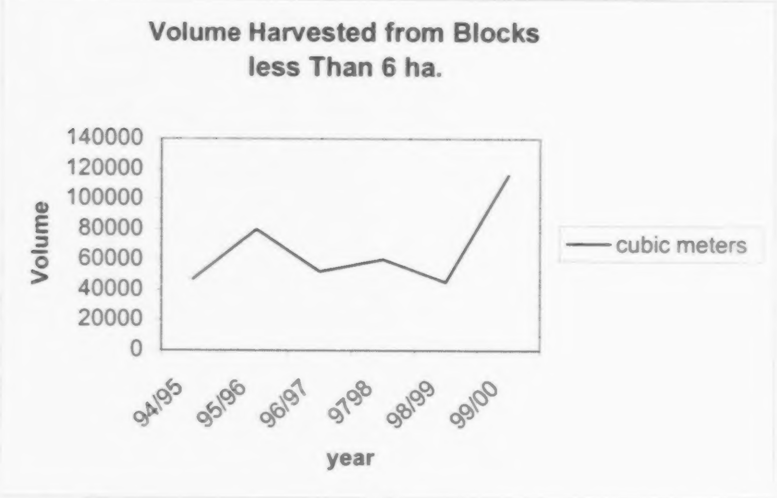

Fig. 3--The volume harvested from blocks less than six hectares in size.

Strategies

To facilitate planning and the assignment of landscape level strategies, the Morice TSA has been mapped by hazard and risk and stratified into units. The stratification was based on current infestation levels and landscape susceptibility and illustrates the need for two different approaches across the TSA. These are described below as the Suppression Zone and the Maintain Low/Salvage Zone. A third strategy of Prevention is to be applied across the TSA where appropriate and when available resources allow.

Suppression Zone

The Suppression zone has been identified as that portion of the TSA that is predominantly comprised of high susceptible stands currently under the influence of low to moderate beetle incidence. This zone includes remote areas South of Houston and North of Tweedsmuir Provincial Park. A Suppression Strategy will be applied to this zone. The Suppression Strategy demands that each infested polygon be addressed by harvest or single tree treatments. Detailed detection and follow-up must be carried out every year to ensure expedient sanitation of infested stands. All possible direct control tactics should be considered and applied where suitable. Where ever possible a harvest tactic should be given first consideration. Long-term approaches to reduce future threats to timber or other resources will also be applied. This strategy must be continued until:

1. High to extreme hazard stands are removed;
2. the infestation collapses; or
3. infestation levels exceed the resources available for a suppression program.

Maintain Low/Salvage Zone

The Maintain Low/Salvage zone has been identified as that portion of the Morice TSA that is predominantly comprised of moderate to high susceptible stands currently under the influence of high to severe beetle incidence. This area is North of Houston; mainly North of Babine Lake. The intent of this strategy is to accommodate expected beetle activity in the normal planning process and to deal with newly detected infestations as they arise. It is important that the mountain pine and spruce bark beetle continue to be addressed on a priority basis. Rigorous detection and follow-up must be carried out; this includes the judicious use of pheromone and trap tree placement and harvesting. All major access should be in place or planned in conjunction with hazard rating. Single tree treatments will only be utilized in small inoperable or inaccessible areas where infestations are placing adjacent healthy stands or other strategic units at risk. Within this zone areas will be managed under more of a salvage strategy. This would occur in areas that have experienced extensive outbreaks covering a large proportion of the available susceptible stands and where access is planned or possible within a five year time frame. The intent of this strategy is to delineate where management efforts would be ineffective in substantially reducing beetle populations and focus on recovering timber values before they are lost. This strategy is to be implemented when sufficient harvesting capacity is available and all other high priority areas have been adequately addressed.

Prevention Strategy

The Prevention Strategy will have limited application across the Morice TSA until infestation levels are significantly reduced from current levels. The intent of this strategy is to reduce susceptibility and future impacts through forest cover manipulation. The overall strategy is to remove susceptible host in an organized manner that will not create continuous stands of susceptible forest over the next rotation.

Management Unit Data

The following tables summarize the District's needs in order to meet the priorities discussed above. Program needs are identified in two tables--one for addressing forest health issues within the TSA and one for addressing forest health issues within the parks (listed above). Performance measures are also included below.

MORICE (no Parks)
Forest Health Maintenance Activities
For the 2001/02 Fiscal Year

Protection of Current Inventory Sub-Program:

			Five-year Plan Goals					Annual Plan 2001/02		
	Activities	**Units**	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($)	Funding ($)	Priority C, H, M, L
1	Ground Surveys	ha	150	150	150	150	150	$100	$15,000	M
2	Defoliator spraying	ha	0	0	0	0	0	0		
3	Aerial Survey - overview	ha	679000	679000	679000	679000	679000			
4	Aerial Surveys - detailed	ha	382000	382000	382000	382000	382000			
Totals hectares			1061000	1061000	1061000	1061000	1061000			
5	Aerial Survey - overview	hrs flying time	0	0	0	0	0			
6	Aerial Surveys - detailed	hrs flying time	100	100	100	100	100	900	$90,000	C
7	Fall and burn treatment	trees	4000	4000	4000	4000	4000	75	$300,000	C
8	MSMA treatment	trees	20000	20000	20000	20000	20000	25	$500,000	C
9	Pheromone baiting	trees	2000	2000	2000	2000	2000	50	$100,000	
10	Studies	number						0		
11	Other							0	$40,000	
	Totals							$1,100	$1,045,000	

Priority is critical, high, moderate, low

MORICE (Parks only)
Forest Health Maintenance Activities
For the 2001/02 Fiscal Year

Protection of Current Inventory Sub-Program:

		Five-year Plan Goals					Annual Plan 2001/02		
Activities	Units	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($)	Funding ($)	Priority C, H, M, L
1 Ground Surveys	ha	0	0	0	0	0	$0	$0	
2 Defoliator spraying	ha	0	0	0	0	0	0	0	
3 Aerial Survey - overview	ha	0	0	0	0	0			
4 Aerial Surveys - detailed	ha	30000	30000	30000	30000	30000			
Totals hectares		30000	30000	30000	30000	30000			
5 Aerial Survey - overview	hrs flying time	0	0	0	0	0			
6 Aerial Surveys - detailed	hrs flying time	20	20	20	20	20	800	$16,000	M
7 Fall and burn treatment	trees	500	500	500	500	500	100	50,000	M
8 MSMA treatment	trees	20000	20000	20000	20000	20000	20	400,000	H
9 Pheromone baiting	trees	500	500	500	500	500	60	30,000	H
# Studies	number								
# Other									
Totals							$980	$496,000	

Note: while it is efficient for the Morice district to administer this work on behalf of Parks there is a significant concern regarding the ability of the district to resource these activities (staff time to monitor, etc.)

Forest Health Maintenance Performance Measures - Morice '99-'00

Protection of Current Inventory Sub-program: Activity	**Unit**	**% or other**
Aerial Surveys - Overview	est. % of forested area surveyed/hrs flown/ ha	679,000 ha
Aerial Surveys - Detailed	est. % of susceptible area surveyed/ hrs flown/ ha	382,000 ha
Ground Surveys	est. % of aerially detected infestations gd. surveyed/ ha	300 ha
Treatments	est. % of currently detected infestations addressed by:	
Expedited Harvesting	% / Cubic metres	720,000 m3
Deferred and baited	% / Cubic metres / trees baited	300,000 m3
Single Tree treatments:	% / Cubic metres	
Single Tree Removal	*Cubic metres*	81,339 m3 (SSS)
Fall and Burn Treatment	*Trees*	6993 m3
MSMA Treatment	*Trees*	8864 m3
Abandoned for salvage	% / Cubic metres	0
Unsalvagable	% / Cubic metres	7913 m3
Defoliator Treatment	Hectares treated	0

est. = roughly estimated percentage to the nearest 20% SSS = Small Scale Salvage

4.4.2 Forest Health Information Sub-program

No Forest Health Information Sub-program is proposed, at this time.

4.5 Bulkley-Cassiar Forest District Issues and Priorities

As outlined in section 2.5.1 (Site Class and Age Class Profiles), much of the timber supply in the Bulkley TSA is mature, half being over 200 years old and located primarily on Medium to Poor sites (62 and 16%,respectively). The Timber Supply Analysis relies on this standing volume for at least 90 years, after which regenerated stands contribute almost exclusively to the timber harvest. Since the existing timber supply is at the age and in the condition where Forest Health factors can seriously impact its amount and quality, any such losses will have a direct negative effect on Timber Supply in the short term.

4.5.1 Protection of Current Inventory Sub-program

It is difficult if not impossible to maintain the productivity and health of such an old, generally less than optimal quality forest. However, tactics can be employed which minimize the impact that pests have on the forest. The District has developed a Forest Health Plan that and not only addresses these issues with existing forests, but looks to the health and productivity of the new forests as well. The Forest Health Plan embodies the principles of Integrated Pest Management included in the following strategies:

- Developing Hazard and Risk ratings of the forest to anticipate areas of likely pest activity.
- Adapting management practices to the existing LRMP management zones.
- Developing thresholds of attack in order to prioritize limited treatment resources.
- Detecting pests early through periodic (usually annual) overviews and surveys.
- Encouraging Rapid treatments that minimize the effects of pests on the stand(s), and recoup as much useable timber volume as possible.
- Developing Prevention Strategies that limit the spread of pests or decrease the likelihood of their occurrence.
- Maintaining a high level of awareness and expertise on pest issues amongst District and area staff.
- Periodically monitoring the successfulness of the various strategies.

Management Unit Data

The following tables summarize the District's needs in order to meet the priorities discussed above. Program needs are identified in two tables--one for addressing forest health issues within the TSA and one for addressing forest health issues within parks. Performance measures are also included below.

Some suggest using the numbers submitted in the 2000/01 Bark Beetle Allocation / Budgeting process for all five years of this plan. However, if it is expected that the activities will increase or decrease due to declining or expanding pest populations, the plan should reflect this expectation.

Bulkley-Cassiar (No Parks)
Forest Health Maintenance Activities
For the 2001/02 Fiscal Year

Protection of Current Inventory Sub-Program:

			Five-year Plan Goals					Annual Plan 2001/02		
	Activities	**Units**	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($)	Funding ($)	Priority C, H, M, L
1	Ground Surveys	ha	1500	1500	1500	1500	1500	$45	$67,000	C
2	Defoliator spraying	ha	0	0	0	0	0	0		N/A
3	Aerial Survey - overview	ha	0	0	0	0	0			
4	Aerial Surveys - detailed	ha	200000	200000	200000	200000	200000			
Totals hectares			201500	201500	201500	201500	201500			
5	Aerial Survey - overview	hrs flying time	20	20	20	20	20	250	$5,000	H
6	Aerial Surveys - detailed	hrs flying time	23	23	23	23	23	870	$20,000	C
7	Fall and burn treatment	trees	2000	2000	2000	2000	2000	90	$180,000	C
8	MSMA treatment	trees	0	0	0	0	0	0	$0	N/A
9	Pheromone baiting	trees	0	0	0	0	0	0	$0	H
10	Studies	number	0	0	0	0	0	0	$0	
11	Other		100	100	100	100	100	35	$3,500	
	Totals		405143	405143	405143	405143	405143	$1,289	$275,500	

Priority is critical, high, moderate, low

Bulkley-Cassiar (Parks only)
Forest Health Maintenance Activities
For the 2001/02 Fiscal Year

Protection of Current Inventory Sub-Program:

		Five-year Plan Goals					Annual Plan 2001/02		
Activities	**Units**	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($)	Funding ($)	Priority C, H, M, L
1 Ground Surveys	ha	300	300	300	300	300	$60	$18,000	C
2 Defoliator spraying	ha	0	0	0	0	0	0		N/A
3 Aerial Survey - overview	ha	0	0	0	0	0			
4 Aerial Surveys - detailed	ha	10000	10000	10000	10000	10000			
Totals hectares		10300	10300	10300	10300	10300			
5 Aerial Survey - overview	hrs flying time	0	0	0	0	0	0	$0	H
6 Aerial Surveys - detailed	hrs flying time	4	4	4	4	4	857	$3,000	C
7 Fall and burn treatment	trees	800	800	800	800	800	75	60,000	C
8 MSMA treatment	trees	0	0	0	0	0	0	0	N/A
9 Pheromone baiting	trees	0	0	0	0	0	0	0	H
# Studies	number	0	0	0	0	0	0	0	
# Other		100	100	100	100	100	40	4,000	
Totals		21504	21504	21504	21504	21504	$1,032	$85,000	

Priority is critical, high, moderate, low

Forest Health Maintenance
Performance Measures
updated July 26, 2000
Protection of Current
Inventory Sub-program:

Activity	**Unit**	**% or other**
Aerial Surveys - Overview	est. % of forested area surveyed/hrs flown/ ha	95%
Aerial Surveys - Detailed	est. % of susceptible area surveyed/ hrs flown/ ha	95%
Ground Surveys	est. % of aerially detected infestations gd. surveyed/ ha	75%
Treatments	est. % of currently detected infestations addressed by:	
Expedited Harvesting	% / Cubic metres	10%
Deferred and baited	% / Cubic metres / trees baited	30%
Single Tree treatments:	% / Cubic metres	20%
Single Tree Removal	*Cubic metres*	1000m3
Fall and Burn Treatment	*Trees*	1800 trees
MSMA Treatment	*Trees*	0 trees
Abandoned for salvage	% / Cubic metres	10%
Unsalvagable	% / Cubic metres	10%
Defoliator Treatment	Hectares treated	0 ha

est. = roughly estimated percentage to the nearest 20%

4.5.2 Forest Health Information Sub-program

Forest Health Information Sub-program:

	Activities	Units	Five-year Plan Goals					Annual Plan 2001/02		
			2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($)	Funding ($)	Priority C, H, M, L
1	Ground Survey	ha	0	0	0	0	0	$0	$0	
Totals hectares			0	0	0	0	0			
2	Aerial Survey - overview*	hrs flying time	0	0	0	0	0	0	$0	
	Studies/ Operational Trials:									
3	Hazard and risk	number	0	0	0	0	0	0	$0	
4	Impact analyses (G&Y)	number	0	0	0	0	0	0	$0	
5	Treatments	number	1	1	1	1	1	10,000	$10,000	H
6	Training Courses	number	0	0	0	0	0	0	$0	
7	Other		0	0	0	0	0	0	$0	
	Totals		1	1	1	1	1	$10,000	$10,000	

Priority is critical, high, moderate, low

* - reported in this sub-program only if district has no protection of current inventory sub-program

Performance Measures -- Forest Health Information Sub-program

Activity	Unit	
Aerial Surveys - overview*	% of district mapped (ha)	
Ground Surveys	ha	
Studies/ Operational Trials:		
· Hazard and risk	Studies completed/ initiated/maintained	
· Impact analyses (G&Y)	Studies completed/ initiated/maintained	
· Treatments	Studies completed/ initiated/maintained	1
Training Courses	Courses (# trained)	

* - reported in this sub-program only if district has no protection of current inventory sub-program

4.6 Kispiox Forest District Issues and Priorities

There are currently 3 forest health issues which are of some significant importance to the District. In order of priority from most critical to less critical they are as follows:

- Losses due to the western balsam bark beetle may have significant impacts on timber supply. A survey to estimate the incidence of the pest was undertaken in 1999 in a small portion of the district. However, the full extent of the damage (spatially and temporally) in the Kispiox Forest District must be known. To this effect, funding has been secured for an additional contract to expand knowledge on the extent of the infestation during the 2000 field season. This is considered a high priority by both the district and the Prince Rupert Forest Region (PRFR).
- *Inonotus tomentosus* is occurring in mature and immature stands. Volume losses and mortality associated with the disease are not captured in AAC calculations because they are unknown. As this root disease remains active in the stump complexes long after harvesting is complete there is a continued risk that is potentially carried over into stands regenerated on site with infestation centres. As a result the losses could potentially be carried forward further into the future than would be expected for other pests such as bark beetles. This particular health issue is ranked high because of it's impact on spruce which is an economically significant species.
- Occurrence of *Dothistroma spp* (Red Band Needle Blight) in immature pine stands is causing some concern. Silviculture practices in the 80's and early 90's, which heavily favoured the planting of lodgepole pine on many sites across the district, combined with a succession of cool summers and mild winters in recent years may contribute to the increased incidence of this potentially fatal foliar disease. A district overview assessment being undertaken by Region in the summer of 2000 will provide more detailed information on the incidence and provide input into a risk rating for existing stands. Currently, 5 out of approximately 75 stands assessed will require some level of rehabilitation.
- With the exception of Balsam Bark Beetle, infestation by insects in the Kispiox were largely deemed to be at endemic levels. This year, however, the reported occurrence of Spruce Bark Beetle has been marked by a disturbing increase. Spruce bark beetle has been detected in Woodlot 1448 at the south end of the district and in Woodlot 135 in the north central portion of the District. Given the increased incidence reported in the Lakes, the Morice and the Bulkley it is prudent to prepare for a possible detection and baiting program for the next few years.

4.6.1 Protection of Current Inventory Sub-program

4.6.2 Forest Health Information Sub-program

		Five-year Plan Goals					Annual Plan 2001/02		
Activities	Units	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($)	Funding ($)	Priority C, H, M, L
1 Ground Survey	ha	0	0	0	0	0	$0	$0	
Totals hectares		0	0	0	0	0			
2 Aerial Survey - overview*	hrs flying time	20	20	20	20	20	?	0	H
Studies/ Operational Trials:	number	3						60,000	C-H (TSR Direction for IBB)
3 · Hazard and risk	number	0	0	0	0	0	0	0	
4 · Impact analyses (G&Y)	number	0	0	0	0	0	0	0	
5 · Treatments	number	0	0	0	0	0	0	0	
6 Training Courses	number	0	0	0	0	0	0	0	
7 Other		0	0	0	0	0	0	0	
Totals		23	20	20	20	20	$0	$60,000	

Priority is critical, high, moderate, low

Funding for the 3 studies is being shared by region and the district. The $60,000 reported above are district funds for the Balsam Bark Beetle study.

* - reported here sub-program only if district has no protection of current inventory sub-program

4.7 Kalum Forest District Issues and Priorities

Management objectives for addressing forest health maintenance issues in the Kalum Forest District include:

- minimizing losses to stumpage revenues and Allowable Annual Cut (AAC) in mature forest types; and
- protecting Kalum Forest District's substantial incremental silviculture investments in the immature forest types.

The District's strategy is to actively monitor stands to identify forest health concerns and treat them before they become epidemic (initial attack principle). In order to implement this strategy, a forest health survey program will be developed and maintained to identify and quantify resource values and potential forest health risks and impacts. To date the incremental program has invested over twenty (20) million dollars on Kalum Forest District TSA lands. Within each Tree Farm Licence (TFL) a similar incremental investment is in place. This substantial investment must be monitored for losses from entomological and pathological agents.

To date only ten percent (10%) of the managed stands in the Kalum Forest District have had forest health monitoring surveys completed. Currently 4900 ha are due in ISIS.

4.7.1 Protection of Current Inventory Sub-program

Resource Values at Risk

The Mountain Pine Beetle populations in the Kalum are a localized problem. Only 5% of the harvestable landbase is in Lodgepole pine, but it is all concentrated in a few areas. The volume losses resulting from the Mountain Pine Beetle do not seriously impact the district's Allowable Annual Cut (AAC) at the landscape level. However, at the forest level the Mountain Pine Beetle may threaten the viability of local woodlots.

Regional pine stands in the Kalum district are very productive with site indices generally ranging from 20-24. Recent cruises in these pine stands have net cruise volumes of 250 cubic metres.

The non-timber values at risk are:

- public perception—issues regarding beetles spreading from Crown land to private land or vice-versa;
- Nisga'a Memorial Lava Bed Park—high recreation and scenic values;
- botanical forest products—pine mushroom values are very high in these pine types; and
- potential urban interface fire hazard—due to increased fuel loading from beetle kill in and around the communities of Aiyansh and Rosswood the potential urban interface fire hazard has increased.

Beetle Status

The outbreak hazard map by Safranyik shows that the Kalum district is classified as having a low outbreak hazard for Mountain Pine Beetle. Pine is only 5% of the district's AAC, but is concentrated in localized pockets. This district has just begun to address the Mountain Pine Beetle infestation and has no five-year histories or mapping of attack vs. susceptible area ratios in place as of yet. R-values based on green to red rations from ground probes in the fall of 1999 were 1:1.25. The District's flight last summer was sporadic. A flight occurred in August and then again in mid-September after a week of sunny weather. The broods from the September flight were poorly developed.

Strategies

The Mountain Pine Beetle is a localized problem in the Kalum Forest District. While the entire district does not contain a large area of mature Lodgepole pine, these areas do contain significant volumes.

The beetle populations have not reached epidemic levels and the District has an opportunity to keep this population in check and minimize harvestable volume lost to the Mountain Pine Beetle. To address the effects of beetle populations in the Kalum Forest District, the following objectives are in place:

- reduce and maintain beetle populations at manageable endemic levels;
- minimize un-salvaged volume losses;
- reduce potential urban interface fire hazard; and
- minimize impacts to non-timber resource values (i.e.) Nisga'a Memorial Lava Bed Park, pine mushroom harvesting areas, and scenic and recreation values.

The strategy used to meet these objectives is suppression. This strategy is the most appropriate due to the endemic population levels, localized nature of susceptible timber types, and probability of achieving control of the population within a relatively short time span. The suppression strategy will be implemented through an intensive sanitation harvest/salvage, harvest/fall and burn program.

The bark beetle program in the Kalum district is managed by district staff in consultation with other stakeholders by way of the TSA meetings, community association meetings, and one on one stakeholder meetings.

Management Unit Data

Some suggest using the numbers submitted in the 2000/01 Bark Beetle Allocation / Budgeting process for all five years of this plan. However, if it is expected that the activities will increase or decrease due to declining or expanding pest populations, the plan should reflect this expectation.

Protection of Current Inventory Sub-Program:

		Five-year Plan Goals					Annual Plan 2001/02		
Activities	**Units**	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($)	Funding ($)	Priority C, H, M, L
1 Ground Surveys	ha	7513	7500	7500	7500	7500	$3	$20,000	M
2 Defoliator spraying	ha	0	0	0	0	0	0	0	
3 Aerial Survey - overview	ha	0	0	0	0	0			
4 Aerial Surveys - detailed	ha	0	0	0	0	0			
Totals hectares		7513	7500	7500	7500	7500			
5 Aerial Survey - overview	hrs flying time	0	0	0	0	0	0	0	H
6 Aerial Surveys - detailed	hrs flying time	7500	7500	7500	7500	7500	1	5,000	H
7 Fall and burn treatment	trees	500	400	300	200	100	108	54,000	H
8 MSMA treatment	trees	0	0	0	0	0	0	0	
9 Pheromone baiting	trees	60	60	60	60	60	33	2,000	H
10 Studies	number	0	0	0	0	0			
11 Other	number	0	0	0	0	0			
Totals		23086	22960	22860	22760	22660		$81,000	

Priority is critical, high, moderate, low

4.7.2 Forest Health Information Sub-program

Based on the annousus root rot project report prepared by district staff, 848 ha of managed stands and $1,085,667.00 of incremental investment are at risk of being lost to annousus root rot. Strategies implemented by the District to address these issues are as follows:

- Deploy pheromone monitoring traps for Northern Pine Twig Pitch Moth – Region.
- Sample defoliator population for Green Stripped Looper (egg mass) – Region and District Staff.

Forest Health Information Sub-program:

		Five-year Plan Goals					Annual Plan 2001/02		
Activities	**Units**	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($)	Funding ($)	Priority C, H, M, L
1 Ground Survey	ha	0	0	0	0	0	$0	$0	
Totals hectares		0	0	0	0	0			
2 Aerial Survey - overview*	hrs flying time	0	0	0	0	0	0	0	
Studies/ Operational Trials:									
3 · Hazard and risk	number	0	0	0	0	0	0	0	
4 · Impact analyses (G&Y)	number	0	0	0	0	0	0	0	
5 · Treatments	number	0	0	0	0	0	0	0	
6 Training Courses	number	5	5	5	5	5	1,080	5,400	
7 Other Photography	number	200	200	200	200	200	10	2,000	
Totals		205	205	205	205	205	$1,090	$7,400	

Priority is critical, high, moderate, low

* - reported here sub-program only if district has no protection of current inventory sub-program

Note: Overview surveys are carried out by the Regional Office

4.8 North Coast Forest District Issues and Priorities

Losses from porcupine feeding have been a concern for the past 15 or more years. Although losses have been observed for a long period of time the effect on timber supply has not been quantified for the North Coast TSA. The Chief Forester has directed the district to continue monitoring the damage. One of the impact analyses listed on the forest health table is a re-measurement of permanent porcupine damage plots in the Fords Cove area the other is a follow up measurement of spruce aphid caused mortality.

4.8.1 Protection of Current Inventory Sub-program

Nothing is proposed, at this time.

4.8.2 Forest Health Information Sub-program

		Five-year Plan Goals					**Annual Plan 2001/02**		
Activities	**Units**	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	Unit Cost ($)	Funding ($)	Priority C, H, M, L
1 Ground Survey	ha	0	0	0	0	0	$0	$0	
Totals hectares		0	0	0	0	0			
2 Aerial Survey - overview*	hrs flying time	0	0	0	0	0	0	0	
Studies/ Operational Trials:									
3 · Hazard and risk	number	0	0	0	0	0	0	0	
4 · Impact analyses (G&Y)	number	2	0	0	0	0	3,250	6,500	H
5 · Treatments	number	0	0	0	0	0	0	0	
6 Training Courses	number	0	0	0	0	0	0	0	
7 Other		0	0	0	0	0	0	0	
Totals		2	0	0	0	0	$3,250	$6,500	

5.0 ENHANCING ENVIRONMENTAL VALUES (EEV)

5.1 Regional Summary of EEV Issues and Priorities

The Watershed Restoration Plan (WRP) presents a number of resource and implementation challenges across the region. The program has been active across the region since its inception in 1994 conducting numerous assessments in the first years and shifting into survey, design and rehabilitation works in the later years. In the eastern districts, fish access has been identified as one of the major impacts to the watersheds, often the result of forest road crossings that were originally, or have become impassable to fish. Restoration of fish access to these areas can reestablish access to many kilometers of valuable habitat upstream of the crossing. The western districts, with their unstable slopes and high energy systems present a different set of challenges. Restorative activities range from road deactivation, to prevent further erosion or landslide potential, to off-channel habitat development, to riparian zone revegetation with the long term objective of developing more stable channels and habitat.

The following table summarizes Landscape Unit (LU) priorities for Skeena–Bulkley Region. These LUs were prioritized based on criteria described in the following section.

District	**LU's**		**Targeted (T)**		**Priority Key (PK)**		**Key (K)**		**Medium Priority (M)**	
	#	**% of Regions LU's**	**#**	**% of PK LU's**	**#**	**% of K LU's**	**#**	**% of LU's**	**#**	**% of LU's**
Lakes	72	18.6	14	27.5	51	96.2	53	73.6	18	25.0
Morice	51	13.2	15	46.9	32	78	41	80.4	10	19.6
Bulkley	48	12.4	12	35.3	34	89.5	38	79.2	10	20.8
Kispiox	31	8	8	57.1	14	50	28	90.3	3	9.7
Kalum	124	32	23	43.4	53	67.1	79	63.7	45	36.3
North Coast	61	15.8	7	70	10	32.3	31	50.8	30	49.2
REGION	387	100	79	40.7	194	71.9	270	69.8	116	30.0

5.2 Criteria

A standardized plan was used as a template to reduce interpretive variation in the criteria; however, criteria were interpreted differently in some Forest Districts. A summary of each districts interpretation of the plan is provided in Section 5.2.2 of this report.

5.2.1 Regional list of criteria used to derive the relative ranking of watersheds and make a determination of key watersheds

Delineation of Planning Units

The first step in the development of the RMP was to establish planning unit boundaries (Appendix A). The *Guidelines for the Development of Resource Management Plans for 2001/01* provided a range for the size of planning unit that would be appropriate for the RMP. For interior watersheds, a range of 30,000 to 75,000 ha was suggested. For coastal areas, a smaller area of 10,000 to 50,000 ha was used.

As a start, Landscape Units (LU's) were examined. The LU is the basic geographic unit, based on height of land (i.e. watersheds), that is employed in forest management planning. In the western districts of the region (North Coast, Kalum and Kispiox), the size of the LU's were considered appropriate for the scope of the RMP so they were adopted as the basic planning unit for the development of the RMP. In the eastern districts (Bulkley, Morice and Lakes), the LU's were considered too large for the RMP exercise. As a result, the LU's were maintained and were further divided into sub-unit that formed the basic planning unit.

The following table (Table 1) summarizes the number and average size of planning units used for the Skeena-Bulkley Region for the purposes of this RMP.

Table 1 -- Number and average size of planning units.

Forest District	Number of Planning Units	Average Size (ha)
Lakes	72	16,330
Morice	51	29,184
Bulkley	48	15,976
Kispiox	31	41,732
Kalum	124	32,056
North Coast	61	33,719
REGION	**387**	**27,914**

Defining the Resource Values for each Planning Unit

The fisheries and water use values were assessed for each planning unit. The purpose of examining resource values alone is to identify, on a regional basis, the KEY watersheds: those watersheds, or more accurately the planning units in which they fall, that have significant fisheries and/or domestic water use values.

The fisheries resource values were researched for each of the planning units. The information was obtained for each of the planning units (where information was available). The sources used to gather this information were:

- Fisheries Information Summary System (FISS)
- WRP Assessment information
- Local knowledge of MELP (fisheries, habitat) and MoF staff (DFO were invited to participate, but, for the most part, were unable to take part due to staffing constraints)
- Stakeholder reports and local knowledge
- Other fisheries reports

The criteria used to assess fisheries values were developed using categories defined in the following three reports:

- Anonymous. 1998. *Living Blueprint for BC Salmonid Habitat*. Pacific Salmon Foundation. Published by an Independent Panel
- Haas, G.R. 1998. *Indigenous fish species potentially at risk in BC with recommendations and prioritization's for conservation forestry/resource use,inventory and research*, Fisheries Management report No. 105, Ministry of Fisheries, Vancouver, BC
- Cannings, SG and J. Ptolmey. 1998. *Rare Freshwater Fish of British Columbia*. Ministry of Environment, Lands and Parks, Victoria, BC

Using the following three categories, the status of a fish population or species in each of the landscape units and/or watersheds was determined:

Populations at High Risk of Extinction (PopHRE): Fish populations at high risk of extinction (Anon. 1998*)*. This also includes, but is not limited to, populations that have regional conservation concerns (i.e. Skeena summer run timing coho, Kitimat eulachon etc).
Population of Provincial Significance *(*PopProvSign): Fish species that have been identified provincially as being particularly sensitive to forest harvesting activities (Haas 1998). In the Kalum this refers mostly to bull trout (BT), Dolly Varden (DV) and/or cutthroat trout (CT). This criteria can also include other rare species found in the Region (e.g. giant pigmy whitefish, giant black stickleback).
Population of Regional Significance (PopRegSign): Refers to populations that contribute to significant native, sport or commercial fisheries (in no order of hierarchy).

A landscape unit's *Priority for Fish* category is described (ranked) using four basic rankings: very high (VH), high (H), moderate (M), and low (L). Using the best information available, a ranking was assigned to each Landscape Unit (LU):

- If a LU contained a PopHRE then it was immediately given a **VH** ranking;

- If more than one PopProvSign were present, or one PopProvSign along with PopRegSign, then the LU was also assigned the **VH** ranking;
- If two or more PopRegSign were present, then a **H** ranking was assigned;
- If only one PopRegSign, then a **M** ranking was assigned
- Remaining LU's that did not have the previous described rankings were given a EEV Priority for Fish ranking of **L**.

This method of ranking was developed to best try and fit the program goals as defined by the objectives of the EEV program. Although this method of ranking was generally followed, some values were moved up or down based on detailed knowledge of the watersheds and the significance of the populations in the area.

Water Use

The highest rankings for domestic water use, described as very high (**VH**), were assigned to those planning units that contained a Community Watershed, as designated in the Forest Practices Code of British Columbia.

Those planning units that did not have a community watershed, but had a significant number of licensed water uses were assigned a high (**H**) ranking. Planning units with little or no domestic water use were assigned a medium (**M**) to low (**L**) ranking.

Identification of Key Landscape Units (watersheds)

A Key watershed is defined as a watershed that contains significant (ranked **VH** or **H**) fisheries values and/or significant (ranked **VH** or **H**) domestic water use. Where available, information was gathered for each LU and ranking of **KEY** was assigned to LU's that fit the criteria described above. Given the significant fisheries resources that are found throughout the Skeena-Bulkley Region, many of the planning units were unsurprisingly assigned the KEY LU ranking. Given this fact, it was decided that the KEY ranking would be revisited after the condition and eligibility of the watershed was assessed in order to present a plan the was more useful in focusing on priority watersheds.

Description of the General Condition of the Landscape Unit

The condition of the Planning Unit is a crude measure of geography and development history of the planning unit, based on available information. District staff were requested to assess the Landscape units (and/or sub units), and assign low, medium, and high rankings under the following headings:

Past Development ranking was based on the extent of past harvesting within the LU.
Probability of Future Impacts ranking was based on professional judgement of the LU's geography, harvesting history, and experience with planning units that have a similar, more extensive harvesting history in the area. This criterion was used to assess the probability that negative affects to the aquatic resources from historical harvesting practices that, although not currently apparent, may occur in the future.

Probability of Success ranking was based on professional judgement of the LU's geography, identified impairments to its' aquatic habitat, and work required to rehabilitate the impacts. This category often relates to the overall stability of the drainage, energy of the river/stream system, bedload movement, and the type of restorative work proposed.

Assign the Stage of Work within the Planning Unit

A value of 0 to 4 was assigned based the following definitions:

Stage 0: No WRP activities initiated
Stage 1: Overview assessment completed
Stage 2: Detailed assessments/prescriptions/survey and design completed for selected sites in the planning unit
Stage 3: Works underway or immediately scheduled
Stage 4: Monitoring and evaluation of works completed/no more work recommended

Summary of the RMP Development Process by District

As stated in the introduction, since it's initial implementation in 1999, slight variations in the overall development of the RMP occurred in each district. These variations are described in this section.

Lakes Forest District

Fisheries information was provided on a Landscape Unit level. District MoF staff completed the RMP tables and assigned the rankings with input from the district proponents for the EEV program. Extensive changes were made to the 2000 – 2001 LU sub unit rankings. The changes were based on resource information that was provided to the delivery agencies in the summer of 2000. The RMP was modified to incorporate the data and final rankings for the information and was rolled into this 2001-2002 regional RMP.

Morice Forest District

Resource information was provided on a Landscape Unit level. The landscape units were then ranked by MoF regional staff and MELP regional staff. The Landscape Units were then sub divided into sub-units. The information presented in the RMP document is at the Landscape Unit level; all the watershed sub-units within a Landscape Unit were assigned the same criteria values as the entire Landscape Unit. The sub-units should be re-ranked, based on sub-unit level information. Due to recommendations from the stakeholders, the planning unit rankings of two LU's (10 sub units) were changed from the 2000-2001 RMP.

Bulkley Forest District.

Resource information for the 2000–2001 EEV RMP was completed by MELP regional and MoF district staff. Meetings were held with the EEV proponents and the final rankings were assigned. The 2001-2002 RMP data was revised slightly based on information supplied by the district EEV proponents. The result was that four LU rankings were changed from the 2000-2001 RMP.

Kispiox Forest District

MELP and MoF district staff completed the RMP in the Kispiox for 2000-2001. The assigned rankings were agreed to by both agencies and will be used unchanged for the 2000-2002 RMP.

Kalum Forest District

District staff for both MoF and MELP are administering EEV activities in the Kalum District. They sought input from the current district proponents, entered the RMP data as per the guidelines and submitted the final ranking for the regional compilation. Some of the LU General Condition Criteria (see above) have not been completed and should be submitted for completeness.

North Coast Forest District

The LU ranking process was completed for the 2000-2001 RMP by MoF district staff in consultation with district proponents. Representatives of MELP reviewed the RMP data , held discussions with MoF staff, and agreed to the final rankings for the 2001-2002 document.

5.2.2 The criteria used to designate key watersheds into categories I-V

The document *Guidelines for the Development of RMP's 2001/02- EEV Component* provided a category system that each LU was slotted into. The rationale behind this ranking is to assess, to some extent, the eligibility or requirement of FRBC funding and other funding sources for restoration purposes. The definitions are as follows:

Category I: *Watersheds that have impacts from pre-Code forestry but are still functional watersheds that will potentially benefit from restoration activities.* These watersheds are known to have experienced forestry-related habitat impairment or water-quality degradation in at least a portion of the watershed (at least 15 % of the total area), or are believed to have a forestry related threat to fish habitat or water quality, but there are still significant areas of good quality habitat. It is believed that restoration activity can be rapidly focused on improving conditions or preventing damage before it occurs (e.g., roads with high risk of failure). Category I watersheds can also include those portions of a watershed that contain important identified species and are upstream of agricultural or urbanized areas, or supply water to a community intake that is upstream of other land uses. Where the important habitat areas are affected by *other* land uses, the watershed is not Category I. This category may include watersheds where restoration activity has previously occurred.

Category II: *Watersheds with impacts from pre-Code forestry as well as other land uses (including private land) and where there is a coordinated restoration plan in place. The watershed must still be functional and able to benefit from coordinated activity.*

Restoration will require a coordinated approach to address all of the land-use impacts. WRP activities in Category II watersheds must be coordinated with other funding sources, such as Fisheries Renewal or HRSEP, in order to significantly affect fish recovery or water quality improvement. This category may include watersheds where restoration activity has previously occurred.

Category IIB: *Watersheds with significant impacts from other land use, including private land, but where there is no coordinated restoration plan in place.*
Restoration of these watersheds through activity only in the forest land will potentially provide low benefit because of impacts from other land uses such as agriculture, mining or residential development.

Category III: *watersheds with minimal or no pre-Code forestry-related impairment of fish habitat or water quality.*
In these cases, restoration activity may not be required or may not be cost effective in relation to a small, incremental improvement in fish or water quality. This category includes watersheds with little or no forest development.

Category IV: *Watersheds known to be impacted to such an extent that a restoration effort is unlikely to be successful.*
These watersheds are believed to have experienced such extensive habitat or hillslope damage that expenditures will be so high and restoration time so slow that it is not cost-effective to restore.

Category V: *Watersheds with insufficient data to make a determination.*
Watersheds with no assessment surveys are temporarily on hold and are subject areas for overview assessments. They do not become candidate watersheds for restoration activity until more is known about their status, but they are not rejected at this point either.

Final Ranking Process

The overall goal of the RMP is to identify the top 20% of watersheds that require and will benefit the most from restoration activities. FRBC's goal is to target these watersheds for WRP investment with the hope of completing the restoration of them in five years. Using the information gathered in the previous phases of the RMP development, the following rankings were assigned:

Targeted (T): Those LU's that are to be targeted for FRBC investment with the goal of completing restorative activities in those LU's by 2005. A goal of the EEV program is to **Target** 20% of the **Priority Key** LU's for completion by 2005.

Priority Key (PK): Those LU's that are **Key** and are evaluated to be a Category I or II as outlined above.

Key (K): Those LU's with significant fisheries resources and/or domestic water use that may benefit from restoration in the future, but do not fall within the top 20%.

Medium Priority (M): Based on the programs objectives, those LU's with lower fisheries resources and domestic water use, or those watersheds with significant fish or water resources resource but have had very little or no harvesting history.

Transition (Tr): Those LU's that have been identified as Transition in the 2000-2001 RMP but are ineligible for investment starting March 31, 2001.

Completed (C): Watersheds that have completed all the objectives identified in the Targeted LU's Restoration Plans (RP). Targeted LU's RPs are proposed to be completed in the fall of 2000.

5.3 *Table 2 -- Summary of Regional Priority Setting*

The data gathered and evaluated in section 5.2 of this document is summarized and presented in the following table.

Summary of Regional Priority Setting		
Skeena Bulkley Region Landscape Unit Breakout		

Region WU Breakdown	Number
All watershed units with some pre-Code forest harvesting	248
Number of watershed units which are important producers/conservers for targeted fish species/stocks or domestic water supply (**Key** watersheds)	268
Number of key watersheds (i.e. VH, H values for fish/water values)	268
Category I key watersheds	182
Category II key watersheds	18
Category IIB key watersheds	-
Category III key watersheds	45
Category IV key watersheds	2
Category V key watersheds	21
Number of **Priority Key** watersheds	192
Targeted watersheds	80

5.4 *Watershed Status Report*

5.4.1 Table 3(a) -- All Watershed Units

Minimum Data Requirements for Watershed Units--Lakes Forest District Landscape Units

MoF District	Watershed Unit	Sub-Unit	Regional priority for domestic water supply (VH, H, M)	Regional priority for fish (VH, H, M)	Key watershed for region (Y/N)	(Categories I-V) Likelihood of Success	Priority Key Watershed	Targeted	MYA # (for Ws units with active projects)	Name(s) of implementing partners	Transition Watershed (Y/N)
Lakes	Babine East	Four Mile	L	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Babine East	Gullwing	L	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Babine East	Sutherland	L	H	Yes	3	Yes	No	Y	Babine FP	No
Lakes	Babine West	Froggy-South	M	H	Yes	1	Yes	No	Y	Babine FP	Yes
Lakes	Babine West	Pendleton	H	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Babine West	Pierre	M	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Babine West	Twain	M	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Babine West	Upper Pinkut	M	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Bulkley	Broman	H	VH	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Bulkley	Crow-Foxy	H	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Bulkley	Day Lake	H	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Bulkley	Maxan	M	VH	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Bulkley	Upper Foxy	M	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Burns Lake East	Burns	H	H	Yes	1	Yes	Yes	Y	Babine FP	No
Lakes	Burns Lake East	Cheskwa	H	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Burns Lake East	Sheraton	H	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Burns Lake East	Shovel	M	VH	Yes	1	Yes	Yes	Y	Babine FP	No
Lakes	Burns Lake East	Tchesinkut E.	H	H	Yes	1	Yes	Yes	Y	Babine FP	No
Lakes	Burns Lake East	Tercer	H	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Burns Lake West	Decker Stearns	H	M	Yes	2	Yes	Yes	Y	Babine FP	No
Lakes	Burns Lake West	Eagle Ck.	H	M	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Burns Lake West	Gerow	H	M	Yes	1	Yes	Yes	Y	Babine FP	No

MoF District	Watershed Unit	Sub-Unit	Regional priority for domestic water supply (VH, H, M)	Regional priority for fish (VH, H, M)	Key watershed for region (Y/N)	(Categories I-V) Likelihood of Success	Priority Key Watershed	Targeted	MYA # (for Ws units with active projects)	Name(s) of implementing partners	Transition Watershed (Y/N)
Lakes	Burns Lake West	Palling	H	H	Yes	2	Yes	Yes	Y	Babine FP	No
Lakes	Burns Lake West	Tchesinkut W.	H	M	Yes	1	Yes	Yes	Y	Babine FP	No
Lakes	Chelaslie	Chelaslie Arm	L	H	Yes	5	No	No	Y	FLSM	No
Lakes	Chelaslie	Chief Louie	L	M	No	1	No	No	Y	FLSM	No
Lakes	Chelaslie	Tetachuck Eu	L	M	No	5	No	No	Y	FLSM	No
Lakes	Chelaslie	Tetachuck N	L	M	No	3	No	No	Y	FLSM	No
Lakes	Chelaslie	Uduk	L	M	No	1	No	No	Y	FLSM	No
Lakes	Chelaslie	White Eye	M	H	Yes	1	Yes	Yes	Y	FLSM	No
Lakes	Cheslatta	Bird	M	M	No	2	No	No	Y	FLSM	No
Lakes	Cheslatta	Cheslatta	H	H	Yes	2	Yes	No	Y	FLSM	No
Lakes	Cheslatta	Davidson	M	M	No	6	No	No	Y	FLSM	No
Lakes	Cheslatta	Enz	M	M	No	1	No	No	Y	FLSM	No
Lakes	Cheslatta	Knapp	M	H	Yes	2	Yes	No	Y	FLSM	No
Lakes	Cheslatta	Marilla	M	H	Yes	4	No	No	Y	FLSM	No
Lakes	Cheslatta	Ootsanee	M	H	Yes	1	Yes	Yes	Y	FLSM	No
Lakes	Entiako	Bryan Arm	L	L	No	3	No	No	N	N/A	No
Lakes	Entiako	Captain Harry	L	L	No	3	No	No	N	N/A	No
Lakes	Entiako	Entiako Lake	L	L	No	3	No	No	N	N/A	No
Lakes	Entiako	Entiako River	L	L	No	3	No	No	N	N/A	No
Lakes	Entiako	Euchu	L	L	No	3	No	No	N	N/A	No
Lakes	Entiako	McGibbon	L	L	No	3	No	No	N	N/A	No
Lakes	Entiako	Tetachuck S.	L	L	No	3	No	No	N	N/A	No
Lakes	Fleming	Fleming Ck.	L	H	Yes	1	Yes	Yes	Y	Babine FP	No
Lakes	Fleming	Lower Tildesly	L	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Fleming	Upper Tildesly	L	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Francois East	Binta	M	H	Yes	1	Yes	Yes	Y	FLSM	No
Lakes	Francois East	Binta- North	L	L	No	1	No	No	Y	FLSM	No

MoF District	Watershed Unit	Sub-Unit	Regional priority for domestic water supply (VH, H, M)	Regional priority for fish (VH, H, M)	Key watershed for region (Y/N)	(Categories I-V) Likelihood of Success	Priority Key Watershed	Targeted	MYA # (for Ws units with active projects)	Name(s) of implementing partners	Transition Watershed (Y/N)
Lakes	Francois East	Haney	H	M	Yes	1	Yes	No	Y	FLSM	No
Lakes	Francois East	Red Hills	H	M	Yes	1	Yes	No	Y	FLSM	No
Lakes	Francois East	Takysie	H	M	Yes	1	Yes	No	Y	FLSM	No
Lakes	Francois East	Uncha	H	M	Yes	1	Yes	No	Y	FLSM	No
Lakes	Francois West	Allin Ck.	H	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Francois West	Evans	H	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Francois West	Henkel	H	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Francois West	Issac	M	M	No	1	No	No	Y	FLSM	No
Lakes	Francois West	Katherine Lk.	H	M	Yes	1	Yes	No	Y	FLSM	No
Lakes	Francois West	Ramsey	H	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Francois West	Tatalrose	H	M	Yes	1	Yes	No	Y	FLSM	No
Lakes	Intata	Henson	H	M	Yes	1	Yes	No	Y	FLSM	No
Lakes	Intata	Intata Reach	L	H	No	1	No	Yes	Y	FLSM	No
Lakes	Intata	Natalkuz	L	H	Yes	1	Yes	No	Y	FLSM	No
Lakes	Intata	Ootsa-Intata	M	H	Yes	1	Yes	Yes	Y	FLSM	No
Lakes	Ootsa	Ootsa	H	H	Yes	1	Yes	No	Y	FLSM	No
Lakes	Ootsa	Ootsa South	L	L	No	5	No	No	Y	FLSM	No
Lakes	Ootsa	Square Lk.	M	M	No	1	No	No	Y	FLSM	No
Lakes	Taltapin	Augier/Pinkut	H	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Taltapin	Donald Ldg	H	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Taltapin	Helene	M	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Taltapin	Henrietta	M	H	Yes	1	Yes	No	Y	Babine FP	No
Lakes	Taltapin	Taltapin	H	H	Yes	1	Yes	Yes	Y	Babine FP	No

Minimum Data Requirements for Watershed Units--Morice Forest District Landscape Units

MoF District	Watershed Unit	Sub-Unit	Regional priority for domestic water supply (VH, H, M)	Regional priority for fish (VH, H, M)	Key watershed for region (Y/N)	(Categories I-V) Likelihood of Success	Priority Key Watershed	Targeted	MYA # (for Ws units with active projects)	Transition Watershed (Y/N)
Morice	Clore	Clore	L	H	Yes	3	No	No		No
Morice	Buck	Aitken Creek	VH	VH	Yes	2	Yes	Yes		No
Morice	Buck	Buck Creek	VH	VH	Yes	2	Yes	Yes		No
Morice	Buck	Dungate Creek	VH	VH	Yes	2	Yes	Yes		No
Morice	Burnie	Burnie	L	M	No	3	No	No		No
Morice	Fulton	Fulton River	H	VH	Yes	1	Yes	No		No
Morice	Fulton	Guess Creek	M	VH	Yes	1	Yes	No		No
Morice	Fulton	Tanglechain Creek	M	VH	Yes	1	Yes	No		No
Morice	Gosnell	Gosnell Creek		VH	Yes	3	No	No		No
Morice	Gosnell	Shea Creek		VH	Yes	3	No	No		No
Morice	Granisle	Babine Lake - Granisle	H	VH	Yes	3	No	No		No
Morice	Houston-Tommy	Houston-Tommy Creek		VH	Yes	1	Yes	Yes		No
Morice	Houston-Tommy	Morice River		VH	Yes	1	Yes	Yes		No
Morice	Kidprice	Kidprice Lake		VH	Yes	1	Yes	No		No
Morice	Kidprice	Lamprey		VH	Yes	1	Yes	Yes		No
Morice	Kidprice	Nado/Cedric		VH	Yes	1	Yes	Yes		No
Morice	Kidprice	Nanika River		VH	Yes	1	Yes	Yes		No
Morice	Morice Lake	Atna Lake\Creek		VH	Yes	1	Yes	Yes		No
Morice	Morice Lake	Morice Lake		VH	Yes	1	Yes	Yes		No
Morice	Morice Lake	Morice River-Upper		VH	Yes	1	Yes	Yes		No
Morice	Morrison	Babine Lake - Morrison		VH	Yes	1	Yes	No		No
Morice	Morrison	Morrison Lake		VH	Yes	1	Yes	No		No
Morice	Nadina	Nadina Lake	M	H	Yes	1	Yes	No		No
Morice	Nadina	Nadina River	M	H	Yes	1	Yes	Yes		No
Morice	Nadina	Tagetochlain Lake	M	H	Yes	1	Yes	No		No
Morice	Nanika	Nanika Lake		H	Yes	1	Yes	No		No

MoF District	Watershed Unit	Sub-Unit	Regional priority for domestic water supply (VH, H, M)	Regional priority for fish (VH, H, M)	Key watershed for region (Y/N)	(Categories I-V) Likelihood of Success	Priority Key Watershed	Targeted	MYA # (for Ws units with active projects)	Transition Watershed (Y/N)
Morice	North Babine	Babine Lake - North Babine		VH	Yes	1	Yes	No		No
Morice	North Babine	Big Loon Creek		VH	Yes	1	Yes	No		No
Morice	Owen	Fenton Creek		VH	Yes	1	Yes	Yes		No
Morice	Owen	Owen Creek		VH	Yes	1	Yes	Yes		No
Morice	Owen	Peacock Creek\Morice River		VH	Yes	1	Yes	Yes		No
Morice	Parrott	Parrot Creek	M	M	No	1	No	No		No
Morice	Sibola	Sibola		M	No	3	No	No		No
Morice	Tahtsa	Tahtsa		M	No	3	No	No		No
Morice	Thautil	Chisholm		VH	Yes	3	No	No		No
Morice	Thautil	Starr Creek		VH	Yes	3	No	No		No
Morice	Thautil	Thautil River		VH	Yes	3	No	No		No
Morice	Tochcha/Natowite	Gloyazikut Creek		M	No	1	No	No	Canfor	No
Morice	Tochcha/Natowite	Hautete Creek		M	No	1	No	No	Canfor	No
Morice	Tochcha/Natowite	Natowite Lake		M	No	1	No	No	Canfor	No
Morice	Tochcha/Natowite	Tochcha Lake		M	No	1	No	No	Canfor	No
Morice	Topley	Babine Lake - Topley	H	H	Yes	3	No	No		No
Morice	Topley	Tachek Creek	H	H	Yes	3	No	No		No
Morice	Troitsa	Troitsa		M	No	3	No	No		
Morice	Valley	Barren Creek	VH	VH	Yes	2	Yes	No		No
Morice	Valley	Bulkley River	VH	VH	Yes	2	Yes	No		No
Morice	Valley	Byman Creek	VH	VH	Yes	2	Yes	No		No
Morice	Valley	Emerson Creek	VH	VH	Yes	2	Yes	No		No
Morice	Valley	McQuarrie Creek	VH	VH	Yes	2	Yes	No		No
Morice	Valley	Richfield Creek	VH	VH	Yes	2	Yes	No		No
Morice	Whitesail	Whitesail		M	No	3	No	No		

Minimum Data Requirements for Watershed Units--Bulkley Forest District Landscape Units

MoF District	Watershed Unit	Sub-Unit	Regional priority for domestic water supply (VH, H, M)	Regional priority for fish (VH, H, M)	Key watershed for region (Y/N)	(Categories I-V) Likelihood of Success	Priority Key Watershed	Targeted	MYA # (for Ws units with active projects)	Name(s) of implementing partners	Transition Watershed (Y/N)
Bulkley	Babine	Babine	M	VH	Yes	1	Yes	Yes			No
Bulkley	Babine	Boucher	M	VH	Yes	1	Yes	No			No
Bulkley	Babine	E. Nichyeskwa	M	H	Yes	1	Yes	No			No
Bulkley	Babine	Nilkitkwa Lake	M	VH	Yes	1	Yes	Yes			No
Bulkley	Babine	Nilkitkwa R.	M	H	Yes	1	Yes	No			No
Bulkley	Blunt	Blunt	M	H	Yes	1	Yes	Yes	SCI		No
Bulkley	Blunt	U. Harold Price	L	M	No	1	No	No	SCI		No
Bulkley	Bulkley	Bulkley Valley	VH	H	Yes	2	Yes	No			No
Bulkley	Chapman	Fulton	M	M	No	3	No	No			Yes
Bulkley	Chapman	McKendrick	M	M	No	3	No	No			No
Bulkley	Copper	Caribou	L	H	Yes	1	Yes	No			No
Bulkley	Copper	Copper	L	H	Yes	1	Yes	No			No
Bulkley	Copper	Hankin	L	H	Yes	1	Yes	No			No
Bulkley	Copper	Lee	L	M	No	1	No	No			No
Bulkley	Copper	Mulwain	L	M	No	1	No	No			No
Bulkley	Copper	Serb	L	M	No	1	No	No			No
Bulkley	Copper	Silvern	L	H	Yes	1	Yes	No			No
Bulkley	Corya	Boulder	H	M	Yes	1	Yes	No	Canfor		Yes
Bulkley	Corya	Corya	VH	M	Yes	1	Yes	No	Canfor		Yes
Bulkley	Corya	John Brown	VH	H	Yes	1	Yes	Yes	Canfor		No
Bulkley	Deep Creek	Deep Creek	H	M	Yes	2	Yes	No			No
Bulkley	Deep Creek	Robin Creek	M	M	No	2	No	No			No
Bulkley	Deep Creek	Thompson	L	M	No	3	No	No			No
Bulkley	Harold Price	Lower H. P.	M	VH	Yes	1	Yes	Yes	SCI		No
Bulkley	Harold Price	Touhy	M	H	Yes	1	Yes	No	SCI		No
Bulkley	Kitseguecla	Kitseguecla	M	H	Yes	1	Yes	No	PIR		Yes
Bulkley	Reiseter	Canyon	VH	H	Yes	2	Yes	No			No

MoF District	Watershed Unit	Sub-Unit	Regional priority for domestic water supply (VH, H, M)	Regional priority for fish (VH, H, M)	Key watershed for region (Y/N)	(Categories I-V) Likelihood of Success	Priority Key Watershed	Targeted	MYA # (for Ws units with active projects)	Name(s) of implementing partners	Transition Watershed (Y/N)
Bulkley	Reiseter	Causqua	H	M	Yes	1	Yes	No			Yes
Bulkley	Reiseter	Reiseter	H	H	Yes	1	Yes	No			No
Bulkley	Telkwa	Arnett	H	VH	Yes	1	Yes	No	PIR		No
Bulkley	Telkwa	Bridge	H	VH	Yes	1	Yes	No	PIR		No
Bulkley	Telkwa	Cumming	H	VH	Yes	1	Yes	Yes	PIR		No
Bulkley	Telkwa	Elliot	H	VH	Yes	1	Yes	No	PIR		No
Bulkley	Telkwa	Goathorn	H	VH	Yes	1	Yes	Yes	PIR		No
Bulkley	Telkwa	Howson	H	VH	Yes	1	Yes	No	PIR		No
Bulkley	Telkwa	Jonas	H	M	Yes	1	Yes	Yes	PIR		No
Bulkley	Telkwa	Lower Telkwa	VH	M	Yes	1	Yes	No	PIR		No
Bulkley	Telkwa	Milk	M	VH	Yes	3	No	Yes	PIR		No
Bulkley	Telkwa	Pine	VH	M	Yes	1	Yes	No	PIR		No
Bulkley	Telkwa	Sinclair	M	H	Yes	3	No	No	PIR		No
Bulkley	Telkwa	Tsai	M	H	Yes	3	No	No	PIR		No
Bulkley	Telkwa	Upper Telkwa	H	H	Yes	1	No	No	PIR		No
Bulkley	Telkwa	Winfield	M	M	No	3	No	No	PIR		No
Bulkley	Torkelson	Torkelson	L	M	No	1	No	No			No
Bulkley	Torkelson	Tsezakwa	L	H	Yes	1	Yes	Yes			No
Bulkley	Torkelson	West Babine	L	H	Yes	1	Yes	Yes			No
Bulkley	Trout Creek	Toboggan	VH	VH	Yes	1	Yes	Yes	PIR		No
Bulkley	Trout Creek	Trout	H	VH	Yes	1	Yes	No	PIR		Yes

Minimum Data Requirements for Watershed Units--Kispiox Forest District Landscape Units

MoF District	Watershed Unit	Sub-Unit	Regional priority for domestic water supply (VH, H, M)	Regional priority for fish (VH, H, M)	Key watershed for region (Y/N)	(Categories I-V) Likelihood of Success	Priority Key Watershed	Targeted	Transition Watershed (Y/N)
Kispiox	Atna	Atna		VH	Yes	3	No	No	No
Kispiox	Deep Canoe	Deep Canoe		M	No	5	No	No	No
Kispiox	Larkworthy	Larkworthy		VH	Yes	5	No	No	No
Kispiox	Kuldo	Kuldo		VH	Yes	3	No	No	No
Kispiox	Sicinteen	Sicinteen		VH	Yes	3	No	No	No
Kispiox	Sheladams	Sheladams		VH	Yes	3	No	No	No
Kispiox	Babine Bulkley	W.Nichyeskwa	M	H	Yes	1	Yes	No	No
Kispiox	Babine River	Babine River	H	VH	Yes	5	No	No	No
Kispiox	Cranberry River	Cranberry River		VH	Yes	1	Yes	Yes	No
Kispiox	Gail	Gail		VH	Yes	5	No	No	No
Kispiox	Hanawald	Hanawald		M	No	3	No	No	No
Kispiox	Hazelton	Hazelton	VH	VH	Yes	5	No	No	No
Kispiox	Juniper	Juniper	VH	M	Yes	4	No	No	No
Kispiox	Kispiox	Kispiox	H	VH	Yes	2	Yes	No	Yes
Kispiox	Kitseguecla	Kitseguecla	VH	VH	Yes	1	Yes	Yes	No
Kispiox	Kitwancool	Kitwancool		VH	Yes	1	Yes	No	No
Kispiox	Kitwanga	Kitwanga	VH	VH	Yes	1	Yes	Yes	No
Kispiox	McCully	McCully	VH	VH	Yes	1	No	No	No
Kispiox	Moonlit	Moonlit	H	VH	Yes	1	Yes	No	No
Kispiox	Natlin	Natlin		VH	Yes	1	Yes	Yes	No
Kispiox	Seven Sisters	Seven Sisters		M	No	5	No	No	No
Kispiox	Shedin	Shedin		VH	Yes	3	No	No	No
Kispiox	Shegunia	Shegunia		VH	Yes	1	Yes	No	No
Kispiox	Shelagyote	Shelagyote		VH	Yes	3	No	No	No
Kispiox	Skeena Crossing	Skeena Crossing	VH	VH	Yes	5	No	No	No
Kispiox	Skeena West	Skeena West		VH	Yes	5	No	No	No

MoF District	Watershed Unit	Sub-Unit	Regional priority for domestic water supply (VH, H, M)	Regional priority for fish (VH, H, M)	Key watershed for region (Y/N)	(Categories I-V) Likelihood of Success	Priority Key Watershed	Targeted	Transition Watershed (Y/N)
Kispiox	Suskwa	Suskwa	H	VH	Yes	1	Yes	Yes	No
Kispiox	Sweetin	Sweetin		VH	Yes	1	Yes	No	No
Kispiox	Tenas	Tenas		VH	Yes	1	Yes	Yes	No
Kispiox	Upper Cranberry	Upper Cranberry		VH	Yes	1	Yes	Yes	No
Kispiox	Upper Kispiox	Upper Kispiox		VH	Yes	1	Yes	Yes	No

Minimum Data Requirements for Watershed Units--Kalum Forest District Landscape Units

MoF District	Watershed Unit	Sub-Unit	Regional priority for domestic water supply (VH, H, M)	Regional priority for fish (VH, H, M)	Key watershed for region (Y/N)	(Categories I-V) Likelihood of Success	Priority Key Watershed	Targeted	MYA # (for Ws units with active projects)	Name(s) of implementing partners	Transition Watershed (Y/N)
Kalum	Ansedegan	Ansedegan		H	Yes	1	Yes	No	NTC		No
Kalum	Barrie North	Barrie North		M	No	3	No	No	West Fraser	Haisla	No
Kalum	Barrie South	Barrie South		M	No	3	No	No	West Fraser	Haisla	No
Kalum	Beaver	Beaver		VH	Yes	1	Yes	Yes	SCI	KKBC	No
Kalum	Bish	Bish		H	Yes	5	No	No	West Fraser	Haisla	No
Kalum	Bowser Lake	Bowser Lake		H	Yes	5	No	No	NTC		No
Kalum	Bowser Lower	Bowser Lower		M	No	1	No	No	NTC		No
Kalum	Bowser Upper	Bowser Upper		M	No	3	No	No	NTC		No
Kalum	Brown Bear	Brown Bear		H	Yes	1	Yes	No	NTC		No
Kalum	Cambria Icefields	Cambria Icefields		L	No	3	No	No	NTC		No
Kalum	Cecil	Cecil		VH	Yes	1	Yes	No	West Fraser	Haisla	No
Kalum	Cedar	Cedar		VH	Yes	1	Yes	Yes	SCI	KKBC	No
Kalum	Chimdemash	Chimdemash		H	Yes	1	Yes	No	SCI	KKBC	No
Kalum	Chist	Chist		VH	Yes	1	Yes	No	West Fraser	Haisla	No
Kalum	Clear	Clear		VH	Yes	1	Yes	Yes	SCI	KKBC	No
Kalum	Cleft	Cleft		M	No	5	No	No	NTC		No
Kalum	Clore	Clore	L	VH	Yes	1	Yes	Yes	SCI	TSES	No
Kalum	Copper Lower	Copper Lower	M	VH	Yes	1	Yes	Yes	SCI	TSES	No
Kalum	Craven	Craven		M	No	3	No	No	NTC		No
Kalum	Dala	Dala		H	Yes	1	Yes	No	West Fraser	Haisla	No
Kalum	Damochax Lake	Damochax Lake		H	Yes	3	No	No	NTC		No
Kalum	Dasque	Dasque		H	Yes	1	Yes	No	SCI	KKBC	No
Kalum	Davies	Davies		H	Yes	1	Yes	No	West Fraser	Haisla	No
Kalum	Deltaic	Deltaic		H	Yes	5	No	No	NTC		No
Kalum	Exchamsiks	Exchamsiks		H	Yes	3	No	No	SCI	KKBC	No
Kalum	Exstew	Exstew		H	Yes	1	Yes	Yes	SCI	KKBC	No

MoF District	Watershed Unit	Sub-Unit	Regional priority for domestic water supply (VH, H, M)	Regional priority for fish (VH, H, M)	Key watershed for region (Y/N)	(Categories I-V) Likelihood of Success	Priority Key Watershed	Targeted	MYA # (for Ws units with active projects)	Name(s) of implementing partners	Transition Watershed (Y/N)
Kalum	Falls	Falls		H	Yes	1	No	No	West Fraser	Haisla	No
Kalum	Fiddler	Fiddler		H	Yes	3	No	No	SCI	KKBC	No
Kalum	Foch	Foch		H	Yes	5	No	No	West Fraser	Haisla	No
Kalum	Fuhr	Fuhr		H	Yes	3	No	No	NTC		No
Kalum	Gilttoyees	Gilttoyees		H	Yes	3	No	No	West Fraser	Haisla	No
Kalum	Ginlulak	Ginlulak		H	Yes	1	Yes	Yes	NTC		No
Kalum	Gitnadoix	Gitnadoix		H	Yes	3	No	No	West Fraser	Haisla	No
Kalum	Greenville	Greenville		H	Yes	1	Yes	Yes	NTC		No
Kalum	Hardscrabble	Hardscrabble		H	Yes	1	Yes	No	SCI	KKBC	No
Kalum	Hawkesbury Is E	Hawkesbury Is E		M	No	5	No	No	West Fraser	Haisla	No
Kalum	Hawkesbury Is W	Hawkesbury Is W		M	No	5	No	No	West Fraser	Haisla	No
Kalum	Hirsch	Hirsch		H	Yes	1	Yes	Yes	West Fraser	Haisla	No
Kalum	Horetzky	Horetzky		M	No	5	No	No	West Fraser	Haisla	No
Kalum	Hot Springs	Hot Springs		H	Yes	1	Yes	No	SCI	KKBC	No
Kalum	Hub	Hub		M	No	3	No	No	NTC		No
Kalum	Humphrys	Humphrys		VH	Yes	1	Yes	Yes	West Fraser	Haisla	No
Kalum	Hunter	Hunter		H	Yes	1	Yes	No	West Fraser	Haisla	No
Kalum	Icy	Icy		M	No	3	No	No	West Fraser	Haisla	No
Kalum	Irving	Irving		H	Yes	1	Yes	No	NTC		No
Kalum	Ishkheenickh	Ishkheenickh		VH	Yes	1	Yes	No	NTC		No
Kalum	Jesse	Jesse		H	Yes	3	No	No	West Fraser	Haisla	No
Kalum	Kalum Lower	Kalum Lower		VH	Yes	1	Yes	Yes	SCI	KKBC	No
Kalum	Kaskis	Kaskis		H	No	3	No	No	West Fraser	Haisla	No
Kalum	Kemano River	Kemano River		VH	Yes	1	Yes	No	West Fraser	Haisla	No
Kalum	Kildala	Kildala		H	Yes	1	Yes	No	West Fraser	Haisla	No
Kalum	Kinskuch	Kinskuch		H	Yes	1	Yes	No	NTC		No
Kalum	Kiteen Lower	Kiteen Lower		VH	Yes	1	Yes	No	NTC		No

MoF District	Watershed Unit	Sub-Unit	Regional priority for domestic water supply (VH, H, M)	Regional priority for fish (VH, H, M)	Key watershed for region (Y/N)	(Categories I-V) Likelihood of Success	Priority Key Watershed	Targeted	MYA # (for Ws units with active projects)	Name(s) of implementing partners	Transition Watershed (Y/N)
Kalum	Kiteen Upper	Kiteen Upper		H	Yes	1	Yes	No	NTC		No
Kalum	Kitimat Upper	Kitimat Upper		H	Yes	5	No	No	West Fraser	Haisla	No
Kalum	Kitnayakwa	Kitnayakwa	L	VH	Yes	1	Yes	Yes	SCI	TSES	No
Kalum	Kleanza	Kleanza		H	Yes	1	Yes	No	SCI	KKBC	No
Kalum	Konigus	Konigus		M	No	3	No	No	NTC		No
Kalum	Kot	Kot		M	No	3	No	No	NTC		No
Kalum	Kotsinta	Kotsinta		M	No	3	No	No	NTC		No
Kalum	Kowesas	Kowesas		M	No	3	No	No	West Fraser	Haisla	No
Kalum	Ksedin	Ksedin		H	Yes	1	Yes	Yes	NTC		No
Kalum	Kwinageese	Kwinageese		M	No	1	No	No	NTC		No
Kalum	Kwinamuck	Kwinamuck		M	No	1	No	No	NTC		No
Kalum	Kwinatahl	Kwinatahl		H	Yes	1	Yes	No	NTC		No
Kalum	Lakelse River	Lakelse River		VH	Yes	1	Yes	Yes	SCI	KKBC	No
Kalum	Legate	Legate		H	Yes	1	Yes	No	SCI	KKBC	No
Kalum	Limonite	Limonite	L	H	Yes	1	Yes	No	SCI	TSES	No
Kalum	Lipsconesit	Lipsconesit		H	Yes	3	No	No	NTC		No
Kalum	Little Wedeene	Little Wedeene		VH	Yes	1	Yes	Yes	West Fraser	Haisla	No
Kalum	Madley	Madley		M	No	1	No	No	NTC		No
Kalum	Maroon	Maroon		H	Yes	1	No	No	SCI	KKBC	No
Kalum	Mayo	Mayo		H	Yes	1	No	No	SCI	KKBC	No
Kalum	McKay	McKay		H	Yes	1	Yes	No	West Fraser	Haisla	No
Kalum	Meziadin Lake	Meziadin Lake		H	Yes	1	Yes	Yes	NTC		No
Kalum	Muskaboo	Muskaboo		M	No	3	No	No	NTC		No
Kalum	Nass Headwaters	Nass Headwaters		M	No	3	No	No	NTC		No
Kalum	Nass River Kalum	Nass River Kalum		VH	Yes	1	Yes	No	NTC		No
Kalum	Nass West	Nass West		M	No	5	No	No	NTC		No
Kalum	Nelson	Nelson		H	Yes	1	Yes	Yes	SCI	KKBC	No

MoF District	Watershed Unit	Sub-Unit	Regional priority for domestic water supply (VH, H, M)	Regional priority for fish (VH, H, M)	Key watershed for region (Y/N)	(Categories I-V) Likelihood of Success	Priority Key Watershed	Targeted	MYA # (for Ws units with active projects)	Name(s) of implementing partners	Transition Watershed (Y/N)
Kalum	Oweegee	Oweegee		H	Yes	1	Yes	No	NTC		No
Kalum	Owl	Owl		M	No	5	No	No	NTC		No
Kalum	Owyacumish	Owyacumish		M	No	3	No	No	West Fraser	Haisla	No
Kalum	Panorama	Panorama		M	No	3	No	No	NTC		No
Kalum	Paw	Paw		M	No	5	No	No	NTC		No
Kalum	Ritchie	Ritchie		M	No	1	No	No	NTC		No
Kalum	Rochester	Rochester		M	No	5	No	No	NTC		No
Kalum	Sallysout	Sallysout		M	No	3	No	No	NTC		No
Kalum	Sanskisoot	Sanskisoot		M	No	3	No	No	NTC		No
Kalum	Sanyam	Sanyam		H	Yes	3	No	No	NTC		No
Kalum	Seaskinnish	Seaskinnish		H	Yes	1	Yes	Yes	NTC		No
Kalum	Seekwyakin	Seekwyakin		M	No	5	No	No	West Fraser	Haisla	No
Kalum	Shames	Shames		H	Yes	1	Yes	No	SCI	KKBC	No
Kalum	Skeena River Kalum	Skeena River Kalum		VH	Yes	1	Yes	No	SCI	KKBC	No
Kalum	Slowmaldo	Slowmaldo		H	Yes	3	No	No	NTC		No
Kalum	Snowbank	Snowbank		H	Yes	5	No	No	NTC		No
Kalum	Stewart	Stewart	H	H	Yes	3	No	No			No
Kalum	Taft	Taft		M	No	5	No	No	NTC		No
Kalum	Taylor	Taylor		H	Yes	3	No	No	NTC		No
Kalum	Tchitin	Tchitin		VH	Yes	1	Yes	Yes	NTC		No
Kalum	Tintina	Tintina		VH	Yes	1	Yes	Yes	NTC		No
Kalum	Tony	Tony		H	Yes	3	No	No	NTC		No
Kalum	Treasure	Treasure	L	VH	Yes	1	No	No	SCI	TSES	No
Kalum	Treaty	Treaty		H	Yes	1	No	No	NTC		No
Kalum	Tsaytis	Tsaytis		M	No	3	No	No	West Fraser	Haisla	No
Kalum	Tseax Lower	Tseax Lower		H	Yes	1	Yes	No	NTC		No
Kalum	Tseax Upper	Tseax Upper		H	Yes	1	Yes	Yes	NTC		No

MoF District	Watershed Unit	Sub-Unit	Regional priority for domestic water supply (VH, H, M)	Regional priority for fish (VH, H, M)	Key watershed for region (Y/N)	(Categories I-V) Likelihood of Success	Priority Key Watershed	Targeted	MYA # (for Ws units with active projects)	Name(s) of implementing partners	Transition Watershed (Y/N)
Kalum	Vile	Vile		M	No	3	No	No	NTC		No
Kalum	Wathl	Wathl		H	Yes	1	No	No	West Fraser	Haisla	No
Kalum	Wedeene	Wedeene		VH	Yes	1	Yes	No	West Fraser	Haisla	No
Kalum	Weewanie	Weewanie		H	Yes	1	Yes	No	West Fraser	Haisla	No
Kalum	Whidbey East	Whidbey East		M	No	3	No	No	West Fraser	Haisla	No
Kalum	White	White		M	No	1	No	No	NTC		No
Kalum	Wildfire	Wildfire		H	Yes	5	No	No	NTC		No
Kalum	Williams	Williams		H	Yes	1	Yes	Yes	SCI	KKBC	No
Kalum	Willoughby	Willoughby		M	No	3	No	No	NTC		No
Kalum	Zymacord	Zymacord		VH	Yes	1	Yes	Yes	SCI	KKBC	No
Kalum	Kitlope Upper	Kitlope Upper		M	No	3	No	No	West Fraser	Haisla	No
Kalum	Kapella	Kapella		M	No	3	No	No	West Fraser	Haisla	No
Kalum	Tezwa River	Tezwa River		M	No	3	No	No	West Fraser	Haisla	No
Kalum	Kitlope Lake	Kitlope Lake		M	No	3	No	No	West Fraser	Haisla	No
Kalum	Kalitan	Kalitan		M	No	3	No	No	West Fraser	Haisla	No
Kalum	Tenaiko	Tenaiko		M	No	3	No	No	West Fraser	Haisla	No
Kalum	Ear	Ear		M	No	3	No	No	West Fraser	Haisla	No

Minimum Data Requirements for Watershed Units--North Coast Forest District Landscape Units

MoF District	Watershed Unit	Sub-Unit	Regional priority for domestic water supply (VH, H, M)	Regional priority for fish (VH, H, M)	Key watershed for region (Y/N)	(Categories I-V) Likelihood of Success	Priority Key Watershed	Targeted	MYA # (for Ws units with active projects)	Name(s) of implementing partners	Transition Watershed (Y/N)
North Coast	Aaltanhash	Aaltanhash	N/A	M	No	5	No	No			No
North Coast	Anyox	Anyox	N/A	L	No	3	No	No			No
North Coast	Banks	Banks	N/A	M	No	3	No	No			No
North Coast	Belle Bay	Belle Bay	N/A	H	Yes	3	No	No			No
North Coast	Big Falls	Big Falls	N/A	H	Yes	3	No	No			No
North Coast	Bishop	Bishop	N/A	H	Yes	5	No	No			Yes
North Coast	Brown	Brown	N/A	H	Yes	5	No	No			No
North Coast	Butedale	Butedale	N/A	H	Yes	5	No	No			No
North Coast	Campania	Campania	N/A	M	No	3	No	No			No
North Coast	Captain	Captain	N/A	H	Yes	3	No	No			No
North Coast	Chambers	Chambers	N/A	H	Yes	3	No	No			No
North Coast	Chappel	Chappel	N/A	M	No	3	No	No			No
North Coast	Crab	Crab	N/A	M	No	5	No	No			No
North Coast	Dundas	Dundas	N/A	M	No	3	No	No			No
North Coast	Gil	Gil	N/A	M	No	3	No	No			No
North Coast	Green	Green	N/A	M	No	5	No	No			No
North Coast	Gribble	Gribble	N/A	M	No	5	No	No			No
North Coast	Hartley	Hartley	N/A	H	Yes	5	No	No			No
North Coast	Hawkes	Hawkes	N/A	M	No	3	No	No			No
North Coast	Helmeken	Helmeken	N/A	M	No	3	No	No			No
North Coast	Hevenor	Hevenor	N/A	M	No	5	No	No			No
North Coast	Iknouk	Iknouk	N/A	H	Yes	3	No	No			No
North Coast	Johnston	Johnston	N/A	VH	Yes	3	No	No			No
North Coast	Kaien	Kaien	H	VH	Yes	2	Yes	Yes			No
North Coast	Khtada	Khtada	N/A	VH	Yes	3	No	No			No
North Coast	Khutze	Khutze	N/A	H	Yes	5	No	No			No

MoF District	Watershed Unit	Sub-Unit	Regional priority for domestic water supply (VH, H, M)	Regional priority for fish (VH, H, M)	Key watershed for region (Y/N)	(Categories I-V) Likelihood of Success	Priority Key Watershed	Targeted	MYA # (for Ws units with active projects)	Name(s) of implementing partners	Transition Watershed (Y/N)
North Coast	Khutzeymateen	Khutzeymateen	N/A	H	Yes	3	No	No			No
North Coast	Khyex	Khyex	N/A	H	Yes	3	No	No			No
North Coast	Kiltuish	Kiltuish	N/A	H	Yes	5	No	No			No
North Coast	Kitkiata	Kitkiata	N/A	H	Yes	1	Yes	Yes			No
North Coast	Kitsault	Kitsault	M	H	Yes	1	No	No			No
North Coast	Klekane	Klekane	N/A	M	No	5	No	No			No
North Coast	Kswhan	Kswhan	N/A	M	No	3	No	No			No
North Coast	Kumealon	Kumealon	N/A	H	Yes	1	Yes	Yes			No
North Coast	Kwinamass	Kwinamass	N/A	H	Yes	1	Yes	Yes			No
North Coast	Laredo	Laredo	N/A	M	No	5	No	No			No
North Coast	Marmot	Marmot	N/A	M	No	1	No	No			Yes
North Coast	McCauley	McCauley	N/A	M	No	3	No	No			No
North Coast	Monkton	Monkton	N/A	M	No	3	No	No			No
North Coast	Observatory East	Observatory East	N/A	M	No	3	No	No			No
North Coast	Observatory West	Observatory West	N/A	M	No	3	No	No			No
North Coast	Olh	Olh	N/A	M	No	3	No	No			No
North Coast	Pa-aat	Pa-aat	N/A	M	No	3	No	No			No
North Coast	Pearse	Pearse	N/A	M	No	3	No	No			No
North Coast	Porcher	Porcher	N/A	H	Yes	1	Yes	No			No
North Coast	Quottoon	Quottoon	N/A	VH	Yes	1	Yes	Yes			No
North Coast	Red Bluff	Red Bluff	N/A	H	Yes	3	No	No			No
North Coast	Scotia	Scotia	N/A	H	Yes	1	Yes	No			No
North Coast	Skeena Is.	Skeena Is.	N/A	H	Yes	1	Yes	No			No
North Coast	Somerville	Somerville	N/A	H	Yes	3	No	No			No
North Coast	Sparkling	Sparkling	N/A	H	Yes	3	No	No			No
North Coast	Stagoo	Stagoo	N/A	M	No	3	No	No			No
North Coast	Stevens	Stevens	N/A	L	No	3	No	No			No

MoF District	Watershed Unit	Sub-Unit	Regional priority for domestic water supply (VH, H, M)	Regional priority for fish (VH, H, M)	Key watershed for region (Y/N)	(Categories I-V) Likelihood of Success	Priority Key Watershed	Targeted	MYA # (for Ws units with active projects)	Name(s) of implementing partners	Transition Watershed (Y/N)
North Coast	Surf	Surf	N/A	M	No	5	No	No			No
North Coast	Tolmie	Tolmie	N/A	M	No	5	No	No			No
North Coast	Triumph	Triumph	N/A	VH	Yes	3	No	No			No
North Coast	Trutch	Trutch	N/A	L	No	3	No	No			No
North Coast	Tuck	Tuck	H	H	Yes	1	Yes	Yes			No
North Coast	Union	Union	N/A	H	Yes	1	Yes	Yes			No
North Coast	Whalen	Whalen	N/A	H	Yes	5	No	No			No
North Coast	Nass	Nass	L	M	No	5	No	No			No

5.4.2 Table 3(b) -- Watershed Units with Existing Projects

Minimum Data Requirements for Watershed Units--Lakes Forest District Watershed Units

Watershed Unit	Watershed Number	Transition Watershed (Y/N)	Subbasins Within WU	Overview Assessment			Prescriptions			Major Works			Effectiveness Monitoring		
				Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
Babine East		No	Four Mile	C			C			C					
Babine East		No	Gullwing	C			C			C					
Babine East		No	Sutherland	C			C			C					
Babine West		No	Froggy-South	C			C			C					
Babine West		No	Pendleton	O			O			O					
Babine West		No	Pierre	O			O			O					
Babine West		No	Twain	O			O			O					
Babine West		No	Upper Pinkut	O			O			O					
Bulkley		No	Broman	O			O			O					
Bulkley		No	Crow-Foxy	C			C			C					
Bulkley		No	Day Lake	C			C			C					
Bulkley		No	Maxan	C			C			O			O		
Bulkley		No	Upper Foxy	C			C			O			P		
Burns Lake East		No	Burns	C			C			P					
Burns Lake East		No	Cheskwa	C			C			O					
Burns Lake East		No	Sheraton	C			C			O					
Burns Lake East		No	Shovel	O			O			P			O		
Burns Lake East		No	Tchesinkut E.	C			C			P					
Burns Lake East		No	Tercer	C			C			O					
Burns Lake West		No	Decker Stearns	O			O			P					
Burns Lake West		No	Eagle Ck.	O			O			O					
Burns Lake West		No	Gerow	O			O			P					
Burns Lake West		No	Palling	O			O			P					
Burns Lake West		No	Tchesinkut W.	C			C			P					

Watershed Unit	Watershed Number	Transition Watershed (Y/N)	Subbasins Within WU	Overview Assessment			Prescriptions			Major Works			Effectiveness Monitoring		
				Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
Chelaslie		No	Chelaslie Arm	O			O			O					
Chelaslie		No	Chief Louie	O			O			O					
Chelaslie		No	Tetachuck Eu	C			C			O					
Chelaslie		No	Tetachuck N	C			C			O					
Chelaslie		No	Uduk	O			O			O					
Chelaslie		No	White Eye	O			O			P					
Cheslatta		No	Bird	C			C			O					
Cheslatta		No	Cheslatta	C			C			C					
Cheslatta		No	Davidson	C			C			C					
Cheslatta		No	Enz	C			C			C					
Cheslatta		No	Knapp	C			C			O					
Cheslatta		No	Ootsanee	C			C			P					
Cheslatta		No	Marilla	C			C			O			O		
Entiako		No	Bryan Arm	C			C			C					
Entiako		No	Captain Harry	C			C			C					
Entiako		No	Entiako Lake	C			C			C					
Entiako		No	Entiako River	C			C			C					
Entiako		No	Euchu	C			C			C					
Entiako		No	McGibbon	C			C			C					
Entiako		No	Tetachuck S.	C			C			C					
Fleming		No	Fleming Ck.	C			C			P					
Fleming		No	Lower Tildesly	C			C			O					
Fleming		No	Upper Tildesly	C			C			O					
Francois East		No	Binta	C			C			P					
Francois East		No	Binta- North	C			C			C					
Francois East		No	Haney	C			C			C					
Francois East		No	Red Hills	C			C			O					
Francois East		No	Takysie	C			C			O					
Francois East		No	Uncha	C			C			O					
Francois West		No	Allin Ck.	C			C			C					
Francois West		No	Henkel	C			C			C					
Francois West		No	Issac	C			C			O					
Francois West		No	Katherine Lk.	C			C			O					
Francois West		No	Ramsey	C			C			O					
Francois West		No	Tatalrose	C			C			O					
Francois West		No	Evans	C			C			O					
Intata		No	Henson	C			C			O					
Intata		No	Intata Reach	C			O			P					
Intata		No	Natalkuz	C			O			O					
Intata		No	Ootsa-Intata	O			O			P					

Watershed Unit	Watershed Number	Transition Watershed (Y/N)	Subbasins Within WU	Overview Assessment			Prescriptions			Major Works			Effectiveness Monitoring		
				Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
Ootsa		No	Ootsa	C			C			O					
Ootsa		No	Ootsa South	O			O			O					
Ootsa		No	Square Lk.	C			C			O					
Taltapin		No	Augier/Pinkut	C			C			C					
Taltapin		No	Donald Ldg	C			C			C					
Taltapin		No	Helene	C			C			O					
Taltapin		No	Henrietta	C			O			O					
Taltapin		No	Taltapin	C			O			P					

Minimum Data Requirements for Watershed Units--Morice Forest District Watershed Units

Watershed Unit	Watershed Number	Transition Watershed (Y/N)	Subbasins Within WU	Overview Assessment			Prescriptions			Major Works			Effectiveness Monitoring		
				Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
Clore		No	Clore	Completed			Completed								
Buck		No	Aitken Creek	Completed			Completed								
Buck		No	Buck Creek	Completed			Completed			Ongoing					
Buck		No	Dungate Creek	Completed			Completed								
Burnie		No	Burnie	Completed			Completed								
Fulton		No	Fulton River	Completed			Completed								
Fulton		No	Guess Creek	Completed			Completed								
Fulton		No	Tanglechain Creek	Completed			Completed								
Gosnel			Gosnell Creek	Completed			Completed								
Gosnel			Shea Creek	Completed			Completed								
Granisle		No	Babine Lake - Granisle	Completed			Completed								
Houston-Tommy			Houston-Tommy Creek	Completed			Completed								
Houston-Tommy			Morice River	Completed			Completed			Ongoing					
Kidprice			Kidprice Lake	Completed			Completed								
Kidprice			Lamprey	Completed			Completed								
Kidprice			Nado/Cedric	Completed			Completed								
Kidprice			Nanika River	Completed			Completed								
Morice Lake			Atna Lake\Creek	Completed			Completed								
Morice Lake			Morice Lake	Completed			Completed								
Morice Lake			Morice River-Upper	Completed			Completed								
Morrison		No	Babine Lake - Morrison	Completed			Completed								
Morrison		No	Morrison Lake	Completed			Completed								
Nadina			Nadina Lake	Completed			Completed								
Nadina			Nadina River	Completed			Completed			Ongoing					
Nadina			Tagetochlain Lake	Completed			Completed								
Nanika			Nanika Lake	Completed			Completed								
North Babine		No	Babine Lake - North Babine	Completed			Completed			Ongoing					
North Babine		No	Big Loon Creek	Completed			Completed								
Owen			Fenton Creek	Completed			Completed			Ongoing					
Owen			Owen Creek	Completed			Completed								
Owen			Peacock Creek\Morice River	Completed			Completed			Ongoing					
Parrott			Parrot Creek	Completed			Completed								

Watershed Unit	Watershed Number	Transition Watershed (Y/N)	Subbasins Within WU	Overview Assessment			Prescriptions			Major Works			Effectiveness Monitoring		
				Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
Sibola			Sibola	Completed			Completed								
Tahtsa			Tahtsa	Completed			Completed								
Thautil			Chisholm	Completed			Completed								
Thautil			Starr Creek	Completed			Completed								
Thautil			Thautil River	Completed			Completed								
Tochcha/Natowite			Gloyazikut Creek	Completed			Completed								
Tochcha/Natowite			Hautete Creek	Completed			Completed								
Tochcha/Natowite			Natowite Lake	Completed			Completed								
Tochcha/Natowite			Tochcha Lake	Completed			Completed								
Topley		No	Babine Lake - Topley	Completed			Completed								
Topley		No	Tachek Creek	Completed			Completed								
Troitsa			Troitsa	Completed			Completed								
Valley		No	Barren Creek	Completed			Completed								
Valley		No	Bulkley River	Completed			Completed								
Valley		No	Byman Creek	Completed			Completed								
Valley		No	Emerson Creek	Completed			Completed								
Valley		No	McQuarrie Creek	Completed			Completed								
Valley		No	Richfield Creek	Completed			Completed								
Whitesail			Whitesail	Completed			Completed								

Minimum Data Requirements for Watershed Units--Bulkley Forest District Watershed Units

Watershed Unit	Watershed Number	Transition Watershed (Y/N)	Subbasins Within WU	Overview Assessment			Prescriptions			Major Works			Effectiveness Monitoring		
				Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
Babine		No	Babine	C	?	Ongoing	Planned	Planned	Ongoing	Planned	Planned	Ongoing	Planned	Planned	Planned
Babine		No	Boucher	C	?	?	?	?	?	?	?	?	?	?	?
Babine		No	E. Nichyeskwa	?	?	?	?	?	?	?	?	?	?	?	?
Babine		No	Nilkitkwa Lake	C	?	Ongoing	Planned	Planned	Ongoing	Planned	Planned	Ongoing	Planned	Planned	Planned
Babine		No	Nilkitkwa R.	?	?	?	?	?	?	?	?	?	?	?	?
Blunt		No	Blunt												
Blunt		No	U. Harold Price												
Bulkley		No	Bulkley Valley												
Chapman		Yes	Fulton												
Chapman		No	McKendrick												
Copper		No	Caribou												
Copper		No	Copper												
Copper		No	Hankin												
Copper		No	Lee												
Copper		No	Mulwain												
Copper		No	Serb												
Copper		No	Silvern												
Corya		Yes	Boulder												
Corya		Yes	Corya												
Corya		No	John Brown												
Deep Creek		No	Deep Creek												
Deep Creek		No	Robin Creek												
Deep Creek		No	Thompson												
Harold Price		No	Lower H. P.												
Harold Price		No	Touhy												
Kitseguecla		Yes	Kitseguecla	?	?	?	?	?	?	?	?	?	?	?	?
Reiseter		No	Canyon												
Reiseter		No	Causqua	C	?	?	C	?	?	C	?	?	?	?	?
Reiseter		No	Reiseter												
Telkwa		No	Arnett	C	C	C	C	C	C	C	C	C	C	C	C
Telkwa		No	Bridge	C	C	C	C	C	C	C	C	C	C	C	C
Telkwa		No	Cumming	C	C	C	C	C	C	C	C	C	C	C	C
Telkwa		No	Elliot	C	C	C	C	C	C	C	C	C	C	C	C
Telkwa		No	Goathorn	C	C	C	C	C	C	C	C	C	C	C	C
Telkwa		No	Howson	C	C	C	C	C	C	C	C	C	C	C	C
Telkwa		No	Jonas	C	C	C	C	C	C	C	C	Ongoing	C	C	C
Telkwa		No	Lower Telkwa	C	C	C	C	C	C	C	C	C	C	C	C
Telkwa		No	Milk	C	C	C	C	C	C	C	C	C	C	C	C

Watershed Unit	Watershed Number	Transition Watershed (Y/N)	Subbasins Within WU	Overview Assessment			Prescriptions			Major Works			Effectiveness Monitoring		
				Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
Telkwa		No	Pine	C	C	C	C	C	C	C	C	C	C	C	C
Telkwa		No	Sinclair	C	C	C	C	C	C	C	C	C	C	C	C
Telkwa		No	Tsai	C	C	C	C	C	C	C	C	C	C	C	C
Telkwa		No	Upper Telkwa	C	C	C	C	C	C	C	C	C	C	C	C
Telkwa		No	Winfield	C	C	C	C	C	C	C	C	C	C	C	C
Torkelson		No	Torkelson	?	?	?	?	?	?	?	?	?	?	?	?
Torkelson		No	Tsezakwa	C	?	Ongoing	Planned	Planned	Ongoing	Planned	Planned	Ongoing	Planned	Planned	Planned
Torkelson		No	West Babine	C	?	Ongoing	Planned	Planned	Ongoing	Planned	Planned	Ongoing	Planned	Planned	Planned
Trout Creek		No	Toboggan	C	?	C	C	C	C	C	?	C	?	?	Planned
Trout Creek		Yes	Trout	C	?	C	C	?	C	C	?	Planned	?	?	?

Minimum Data Requirements for Watershed Units--Kispiox Forest District Watershed Units

Watershed Unit	Watershed Number	Transition Watershed (Y/N)	Subbasins Within WU	Overview Assessment			Prescriptions			Major Works			Effectiveness Monitoring		
				Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
Atna		No	Atna												
Deep Canoe		No	Deep Canoe												
Larkworthy		No	Larkworthy												
Kuldo		No	Kuldo												
Sicinteen		No	Sicinteen												
Sheladams		No	Sheladams												
Babine Bulkley		No	W.Nichyeskwa												
Babine River		No	Babine River												
Cranberry River		No	Cranberry River	C			O			O			P		
Gail		No	Gail												
Hanawald		No	Hanawald												
Hazelton		No	Hazelton												
Juniper		No	Juniper	C											
Kispiox			Kispiox	C			O			O			O		
Kitseguecla		No	Kitseguecla	C			O			O			O		
Kitwancool		No	Kitwancool	C			O			O			P		
Kitwanga		No	Kitwanga	C			O			O			P		
McCully		No	McCully	C											
Moonlit		No	Moonlit	C			O			O			P		
Natlin		No	Natlin	C			C			C			P		
Seven Sisters		No	Seven Sisters												
Shedin		No	Shedin												
Shegunia		No	Shegunia												
Shelagyote		No	Shelagyote												
Skeena Crossing		No	Skeena Crossing												
Skeena West		No	Skeena West												
Suskwa		No	Suskwa	C			O			O			P		
Sweetin			Sweetin	C			O			O			O		
Tenas		No	Tenas												
Upper Cranberry		No	Upper Cranberry	C			O			O			P		
Upper Kispiox		No	Upper Kispiox	C			C			C					

Minimum Data Requirements for Watershed Units--Kalum Forest District Watershed Units

Watershed Unit	Watershed Number	Transition Watershed (Y/N)	Subbasins Within WU	Overview Assessment			Prescriptions			Major Works			Effectiveness Monitoring		
				Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
Ansedegan		No	Ansedegan		C	C	C	P	C	O	P	O	P	P	P
Barrie North		No	Barrie North	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Barrie South		No	Barrie South	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Beaver		**No**	**Beaver**	**C**	**C**	**C**	**P**	**P**	**P**	**P**	**P**	**P**	**P**	**P**	**P**
Bish		No	Bish	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bowser Lake		No	Bowser Lake	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bowser Lower		No	Bowser Lower	C		C			C			P			P
Bowser Upper		No	Bowser Upper	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Brown Bear		No	Brown Bear	P	P	P									
Cambria Icefields		No	Cambria Icefields	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cecil		No	Cecil		C	C									
Cedar		**No**	**Cedar**	**C**	**C**	**C**	**P**	**P**	**P**	**P**	**P**	**P**	**P**	**P**	**P**
Chimdemash		No	Chimdemash	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chist		No	Chist	N/A	C	C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Clear		**No**	**Clear**	**C**	**C**	**C**	**O**	**O**	**O**	**O**	**O**	**O**	**O**	**O**	**O**
Cleft		No	Cleft	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Clore		**No**	**Clore**	**O**	**C**	**C**	**O**	**O**	**O**	**O**	**O**	**O**	**O**	**O**	**O**
Copper Lower		**No**	**Copper Lower**	**O**	**C**	**C**	**O**	**O**	**O**	**O**	**O**	**O**	**O**	**O**	**O**
Craven		No	Craven												
Dala		No	Dala	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Damochax Lake		No	Damochax Lake	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dasque		No	Dasque	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Davies		No	Davies	N/A	C	C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Deltaic		No	Deltaic					P	P		P	P		P	P
Exchamsiks		No	Exchamsiks	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Exstew		**No**	**Exstew**	**P**	**P**	**C**	**P**	**P**	**P**	**P**	**P**	**P**	**P**	**P**	**P**
Falls		No	Falls	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fiddler		No	Fiddler	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Foch		No	Foch	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fuhr		No	Fuhr	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gilttoyees		No	Gilttoyees	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ginlulak		**No**	**Ginlulak**		**C**	**C**	**C**	**C**	**C**	**P**		**O**	**P**		**P**
Gitnadoix		No	Gitnadoix	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Greenville		**Yes**	**Greenville**		**C**	**C**			**O**		**P**	**O**		**P**	**P**
Hardscrabble		No	Hardscrabble	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

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				Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
Hawkesbury Island East		No	Hawkesbury Island East	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hawkesbury Island West		No	Hawkesbury Island West	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hirsch		**No**	**Hirsch**		**C**	**C**									
Horetzky		No	Horetzky	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hot Springs		No	Hot Springs	N/A	C	C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hub		No	Hub	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Humphrys		No	Humphrys	N/A	C	C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hunter		No	Hunter	N/A	C	C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Icy		No	Icy	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Irving		No	Irving	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ishkheenickh		No	Ishkheenickh	C	C	C	C			O			P		
Jesse		No	Jesse	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Kalum Lower		**No**	**Kalum Lower**	**C**	**C**	**C**	**O**	**O**	**O**	**O**	**O**	**O**	**O**	**O**	**O**
Kaskis		No	Kaskis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Kemano River		No	Kemano River	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Kildala		No	Kildala	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Kinskuch		No	Kinskuch				C			P			P		
Kiteen Lower		No	Kiteen Lower	C		C	C			C			O		
Kiteen Upper		No	Kiteen Upper	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Kitimat Upper		No	Kitimat Upper	N/A	C	C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Kitnayakwa		**No**	**Kitnayakwa**	**O**	**O**	**O**	**O**	**O**	**O**	**O**	**P**	**O**	**O**	**P**	**O**
Kleanza		No	Kleanza	P	P	P	P	P	P	P	P	P	P	P	P
Konigus		No	Konigus	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Kot		No	Kot	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Kotsinta		No	Kotsinta	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Kowesas		No	Kowesas	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ksedin		No	Ksedin				C		C	O			O		
Kwinageese		No	Kwinageese	P	P	P	P	P	P	P	P	P	P	P	P
Kwinamuck		No	Kwinamuck	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Kwinatahl		No	Kwinatahl						P			P			P
Lakelse River		**No**	**Lakelse River**	**C**	**C**	**C**	**O**	**O**	**O**	**O**	**O**	**O**	**O**	**O**	**O**
Legate		No	Legate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Limonite		No	Limonite	O	P	P	P	P	P	P	P	P	O	P	P
Lipsconesit		No	Lipsconesit	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Little Wedeene		**No**	**Little Wedeene**		**C**	**C**									
Madley		No	Madley	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Maroon		No	Maroon	N/A	C	C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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				Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
Mayo		No	Mayo	C	C	C	P	P	C	C	C	C	O	O	O
McKay		No	McKay	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Meziadin Lake		**Yes**	**Meziadin Lake**		**C**	**C**			**C**			**P**			**P**
Muskaboo		No	Muskaboo	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nass Headwaters		No	Nass Headwaters	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nass River Kalum		No	Nass River Kalum	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nass West		No	Nass West	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nelson		**No**	**Nelson**	**C**	**C**	**C**	**C**	**P**	**C**	**O**	**O**	**O**	**O**	**O**	**O**
Oweegee		No	Oweegee				P		P	P		P	P		P
Owl		No	Owl	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Owyacumish		No	Owyacumish	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Panorama		No	Panorama	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paw		No	Paw	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ritchie		No	Ritchie				P		P	P		P	P		P
Rochester		No	Rochester	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sallysout		No	Sallysout	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sanskisoot		No	Sanskisoot	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sanyam		No	Sanyam	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Seaskinnish		**Yes**	**Seaskinnish**		**C**	**C**	**C**		**O**	**O**		**P**	**P**		**P**
Seekwyakin		No	Seekwyakin	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Shames		No	Shames	N/A	C	C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Skeena River Kalum		No	Skeena River Kalum	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Slowmaldo		No	Slowmaldo	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Snowbank		No	Snowbank	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Stewart		No	Stewart	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Taft		No	Taft	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Taylor		No	Taylor	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tchitin		**No**	**Tchitin**						**C**			**P**	**P**		
Tintina		**No**	**Tintina**				**O**		**O**	**P**		**P**	**P**		**P**
Tony		No	Tony	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Treasure		No	Treasure	O	P	P	O	P	P	P	P	P	O	P	P
Treaty		No	Treaty	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tsaytis		No	Tsaytis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tseax Lower		No	Tseax Lower		C	C			O			P			P
Tseax Upper		**No**	**Tseax Upper**		**C**	**C**	**C**			**P**			**P**		
Vile		No	Vile	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wathl		No	Wathl	N/A	C	C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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				Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
Wedeene		**No**	**Wedeene**		C	C									
Weewanie		No	Weewanie	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Whidbey East		No	Whidbey East	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
White		No	White	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wildfire		No	Wildfire	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Williams		**No**	**Williams**	C	P	C	C	P	C	P	P	P	P	P	P
Willoughby		No	Willoughby	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zymacord		**No**	**Zymacord**	C	P	C	P	P	P	P	P	P	P	P	P
Kitlope Upper		No	Kitlope Upper	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Kapella		No	Kapella	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tezwa River		No	Tezwa River	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Kitlope Lake		No	Kitlope Lake	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Kalitan		No	Kalitan	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tenaiko		No	Tenaiko	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ear		No	Ear	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Minimum Data Requirements for Watershed Units--North Coast Forest District Watershed Units

Watershed Unit	Watershed Number	Transition Watershed (Y/N)	Subbasins Within WU	Overview Assessment			Prescriptions			Major Works			Effectiveness Monitoring		
				Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
Aaltanhash		No	Aaltanhash												
Anyox		No	Anyox	C											
Banks		No	Banks												
Belle Bay		No	Belle Bay												
Big Falls		No	Big Falls	C	C	C	C			C					
Bishop		Yes	Bishop	C			C			O					
Brown		No	Brown	C											
Butedale		No	Butedale												
Campania		No	Campania												
Captain		No	Captain												
Chambers		No	Chambers												
Chappel		No	Chappel												
Crab		No	Crab	C			C			C			O		
Dundas		No	Dundas												
Gil		No	Gil	C											
Green		No	Green												
Gribble		No	Gribble	C			C			O					
Hartley		No	Hartley												
Hawkes		No	Hawkes												
Helmeken		No	Helmeken												
Hevenor		No	Hevenor	C											
Iknouk		No	Iknouk												
Johnston		No	Johnston												
Kaien		No	Kaien	P											
Khtada		No	Khtada	C											
Khutze		No	Khutze												
Khutzeymateen		No	Khutzeymateen												
Khyex		No	Khyex	C											
Kiltuish		No	Kiltuish	C			C			C			P		
Kitkiata		No	Kitkiata	C	C	C	C			C			P		
Kitsault		No	Kitsault	C			C								
Klekane		No	Klekane												
Kswhan		No	Kswhan												
Kumealon		No	Kumealon	C	C	C	C	P	C	C	P	C		P	P
Kwinamass		No	Kwinamass	C	P	P	P	P	P	P	P	P	P	P	P
Laredo		No	Laredo												
Marmot		Yes	Marmot	C			C			P					
McCauley		No	McCauley												

Watershed Unit	Watershed Number	Transition Watershed (Y/N)	Subbasins Within WU	Overview Assessment			Prescriptions			Major Works			Effectiveness Monitoring		
				Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
Monkton		No	Monkton												
Observatory East		No	Observatory East												
Observatory West		No	Observatory West												
Olh		No	Olh												
Pa-aat		No	Pa-aat												
Pearse		No	Pearse												
Porcher		No	Porcher	C			C			C			P		
Quottoon		No	Quottoon	C	C	C									
Red Bluff		No	Red Bluff												
Scotia		No	Scotia	C	C	C	C			C			P		
Skeena Is.		No	Skeena Is.												
Somerville		No	Somerville	C											
Sparkling		No	Sparkling												
Stagoo		No	Stagoo												
Stevens		No	Stevens												
Surf		No	Surf												
Tolmie		No	Tolmie												
Triumph		No	Triumph												
Trutch		No	Trutch												
Tuck		No	Tuck	C			C	P	P	O	P	P	P	P	P
Union		No	Union	C	C	C	P	P	P	P	P	P		P	P
Whalen		No	Whalen	C			C			C					
Nass		No	Nass												

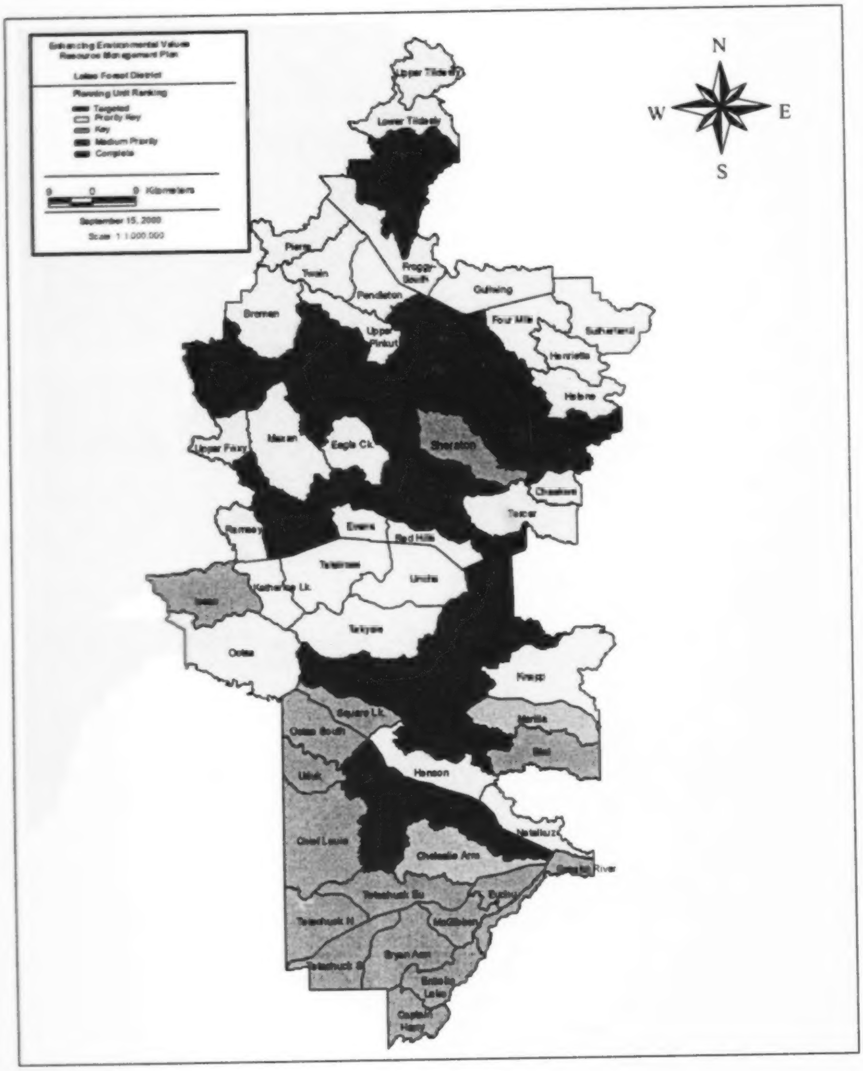
5.5 EEV Research

5.5.1 Regional prioritized list of needs for research and intensive effectiveness monitoring

A regional prioritized list of EEV research needs for the Skeena Bulkley Region was not implemented for this RMP. It is expected the priorities within this component of the program will be further explored and developed in the 2001-2002 delivery season and will be prioritised in the 2002-2003 EEV RMP.

5.6 EEV APPENDICES

A. MAPS OF RANKED WATERSHEDS FOR EACH DISTRICT


Enhancing Environmental Values
Resource Management Plan
Lakes Forest District
Planning Unit Ranking
Targeted
Priority Key
Key
Medium Priority
Complete
0 0 0 Kilometers
September 15, 2000
Scale 1:1,000,000
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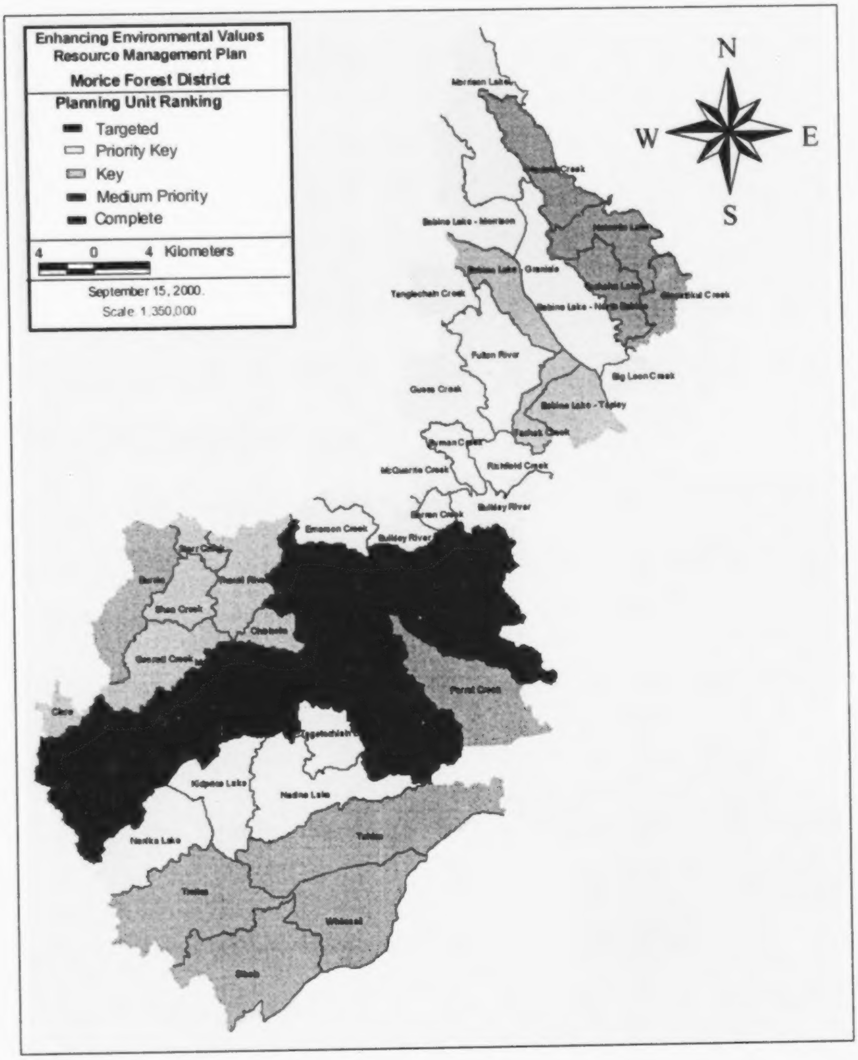
Upper Tildesly
Lower Tildesly
Piers
Twain
Froggy South
Pendleton
Gullwing
Bremen
Upper Pinkut
Four Mile
Sutherland
Henrietta
Helene
Upper Fraser
Maxan
Eagle Ck.
Sheraton
Cheslatta
Tesse
Ramsey
Evans
Red Hills
Tatsimaw
Uncha
Katherine Lk.
Takysie
Ootsa
Knapp
Square Lk.
Ootsa South
Marilla
Uduk
Henson
Natalkuz
Chief Louis
Cheslatta Arm
Skins River
Tetachuck So
Tetachuck N
McGibbon
Bryan Arm
Tetachuck S
Entiako Lake
Captain Harry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Resource Management Plan
Morice Forest District
Planning Unit Ranking
Targeted
Priority Key
Key
Medium Priority
Complete
4 0 4 Kilometers
September 15, 2000.
Scale 1:350,000
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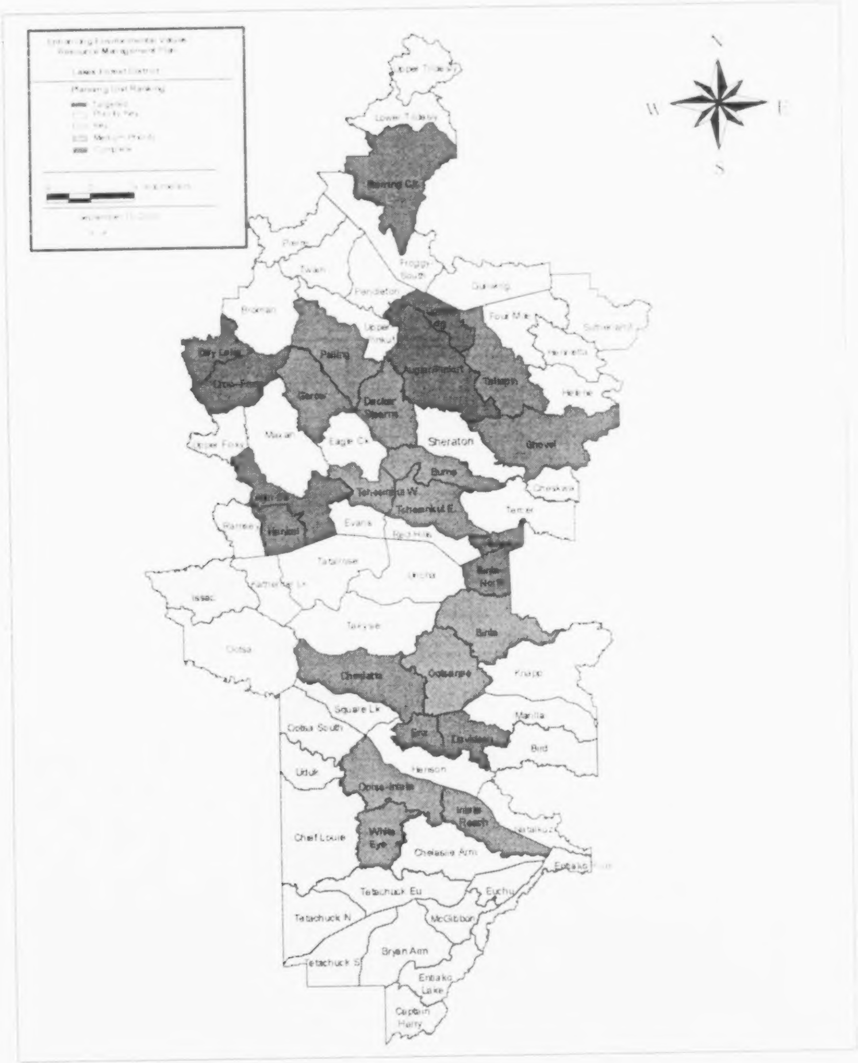
Morrison Lake
Babine Lake - Morrison
Babine Lake - Granisle
Tanglechain Creek
Babine Lake - North Babine
Big Loon Creek
Fulton River
Guess Creek
Babine Lake - Topley
Tachek Creek
Pyman Creek
McQuarrie Creek
Richfield Creek
Bulkley River
Byron Creek
Emerson Creek
Bulkley River
Starr Creek
Shea Creek
Gosnell Creek
Clore
Kidprice Lake
Nadina Lake
Nanika Lake
Tahtsa
Troitsa
Whitesail
Sibola


Enhancing Environmental Values
Resource Management Plan
Lakes Forest District
Planning Unit Ranking
Targeted
Priority Key
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Medium Priority
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Kilometers
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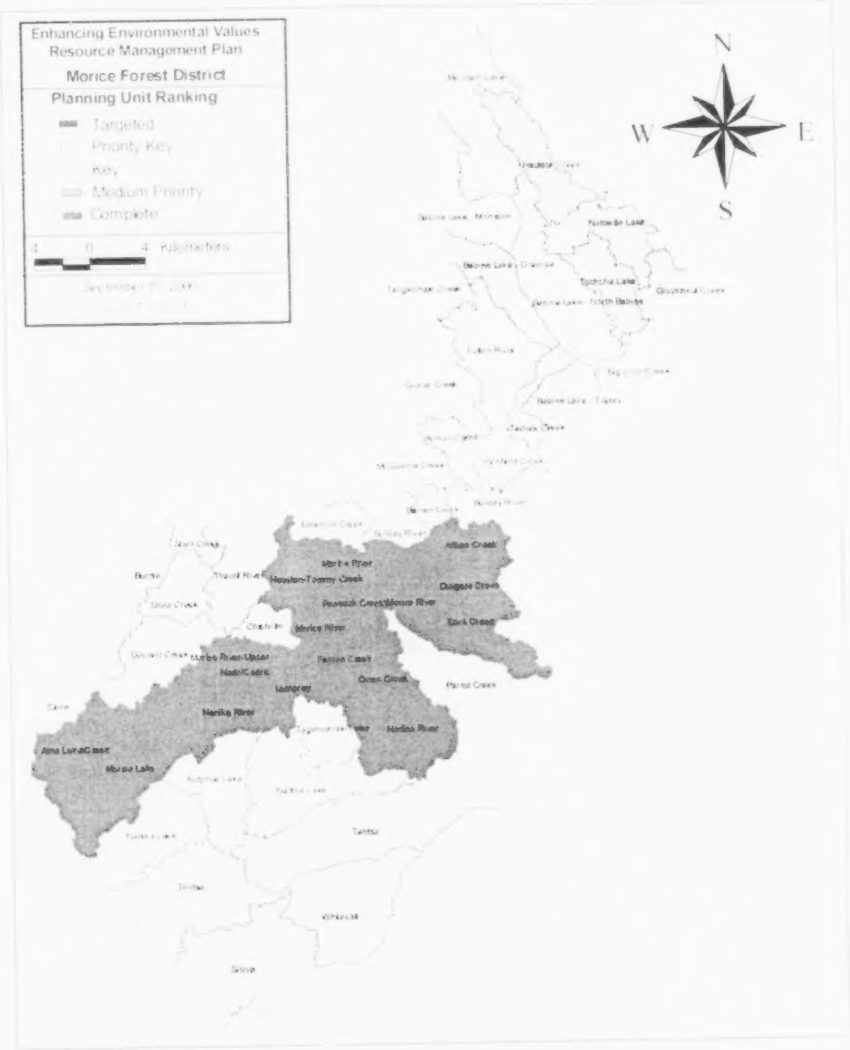
Upper Tildesley
Lower Tildesley
Nourse Ck.
Froggy South
Pendleton
Swan
Broman
Dry Lake
Crow-Finn
Pelling
Upper Tatsuk
Augier/Hulatt
Taltapin
Four Mile
Sutherland
Henrietta
Helene
Garcia
Decker Stearns
Upper Francois
Maxan
Eagle Ck.
Sheraton
Shovel
Burns
Cheslatta
Tchesinkut W.
Tchesinkut E.
Tesler
Ramsey
Evans
Red Hills
Tatalrose
Uncha
Binta North
Issac
Katherine Lk.
Takysie
Binta
Ootsa
Cheslatta
Ootsanee
Knapp
Square Lk.
Ootsa South
Marilla
Bird
Henson
Uduk
Ootsa-Intata
Intata Reach
Natalkuz
Chief Louie
White Eye
Chelaslie Arm
Entiako River
Tetachuck Eu
Euchu
Tetachuck N.
McGibbon
Tetachuck S.
Bryan Arm
Entiako Lake
Captain Harry


Enhancing Environmental Values
Resource Management Plan
Morice Forest District
Planning Unit Ranking
Targeted
Priority Key
Key
Medium Priority
Complete
4 0 4 Kilometers
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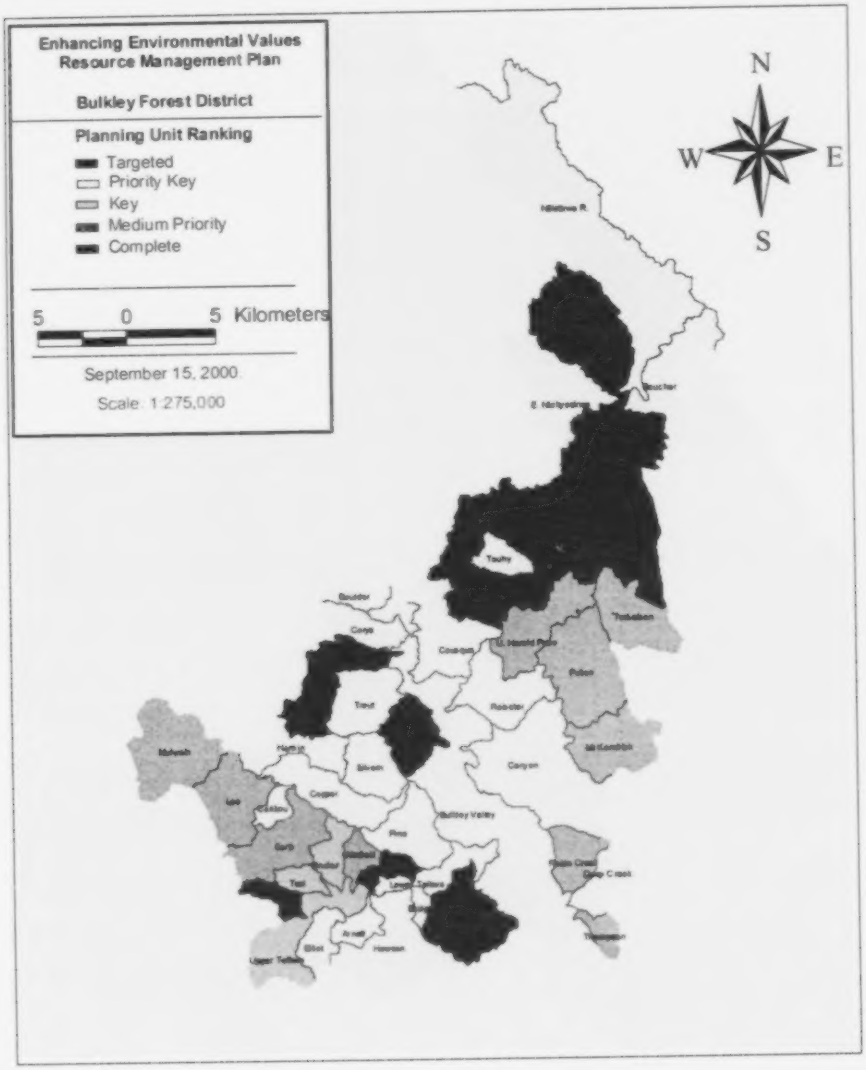
Nutseneh Lake
Babine Lake - Morrison
Babine Lake - Granisle
Tochcha Lake
Babine Lake - North Babine
Fulton River
Babine Lake - Topley
Tachek Creek
Barren Creek
Bulkley River
Thautil River
Houston-Tommy Creek
Morice River
Dungate Creek
Buck Creek
Chisholm
Fenton Creek
Owen Creek
Lamprey
Nanika River
Nadina River
Parrot Creek
Morice Lake
Tahtsa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Resource Management Plan
Bulkley Forest District
Planning Unit Ranking
Targeted
Priority Key
Key
Medium Priority
Complete
5 0 5 Kilometers
September 15, 2000
Scale: 1:275,000
N
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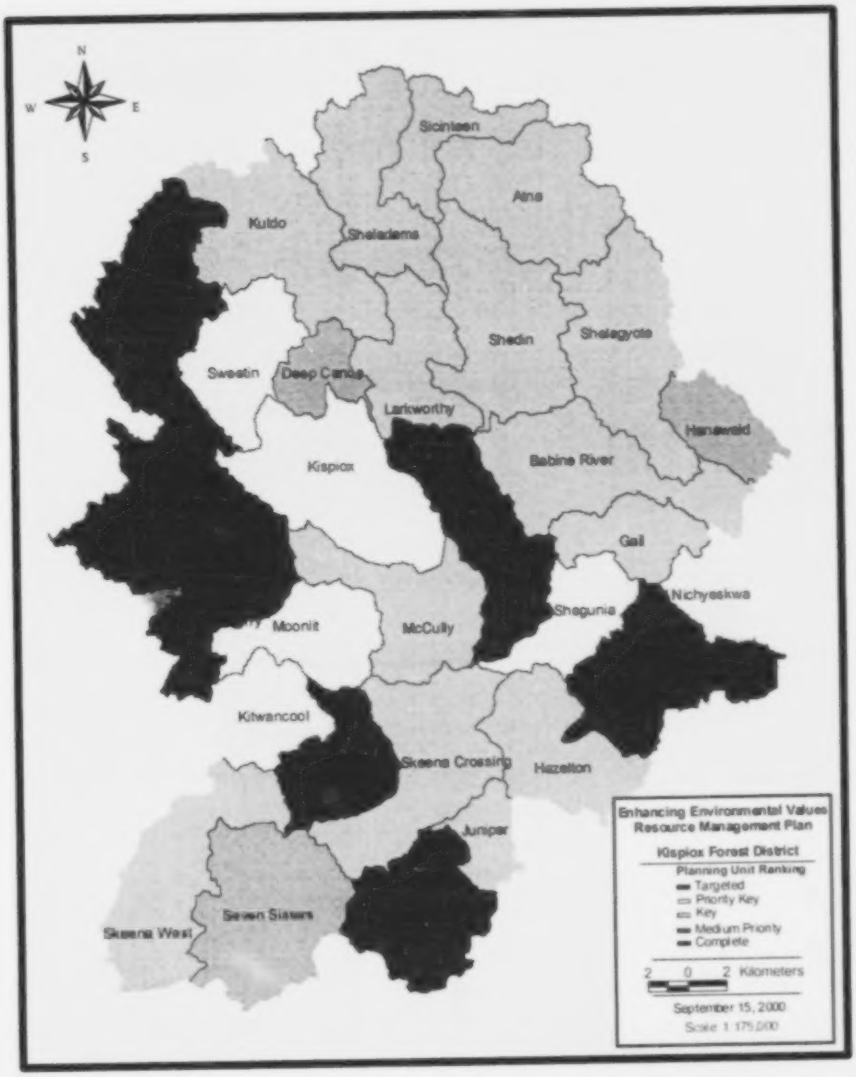
Touhy
Trout
Canyon
Bulkley Valley
Deep Creek
Lower Telkwa
Upper Telkwa
Elliot
McKendrick
Cooper
Pine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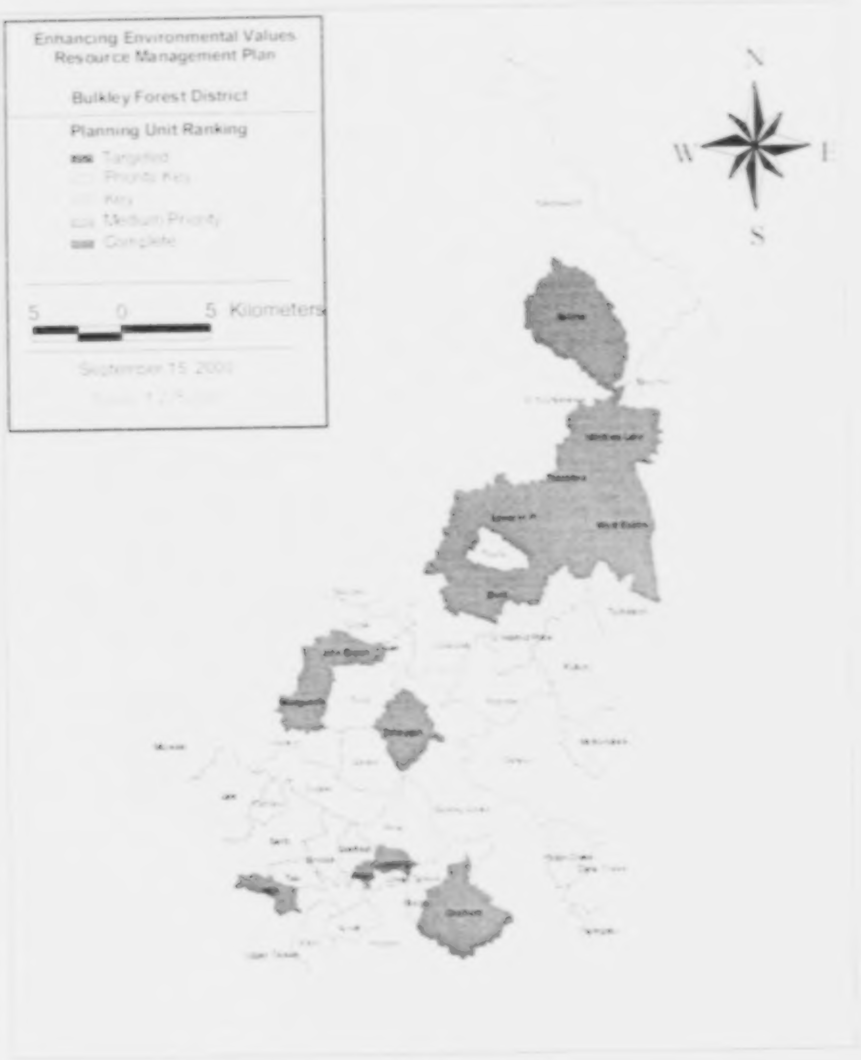
Sicintsen
Aina
Kuldo
Sheladems
Shedin
Shelagyote
Sweetin
Deep Canoe
Larkworthy
Hanawald
Kispiox
Babine River
Gail
Nichyeskwa
Shegunia
Moonit
McCully
Kitwancool
Skeena Crossing
Hazelton
Juniper
Seven Sisters
Skeena West
Enhancing Environmental Values
Resource Management Plan
Kispiox Forest District
Planning Unit Ranking
Targeted
Priority Key
Key
Medium Priority
Complete
2 0 2 Kilometers
September 15, 2000
Scale 1:175,000


Enhancing Environmental Values
Resource Management Plan
Bulkley Forest District
Planning Unit Ranking
Targeted
Priority Key
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Medium Priority
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September 15, 2000
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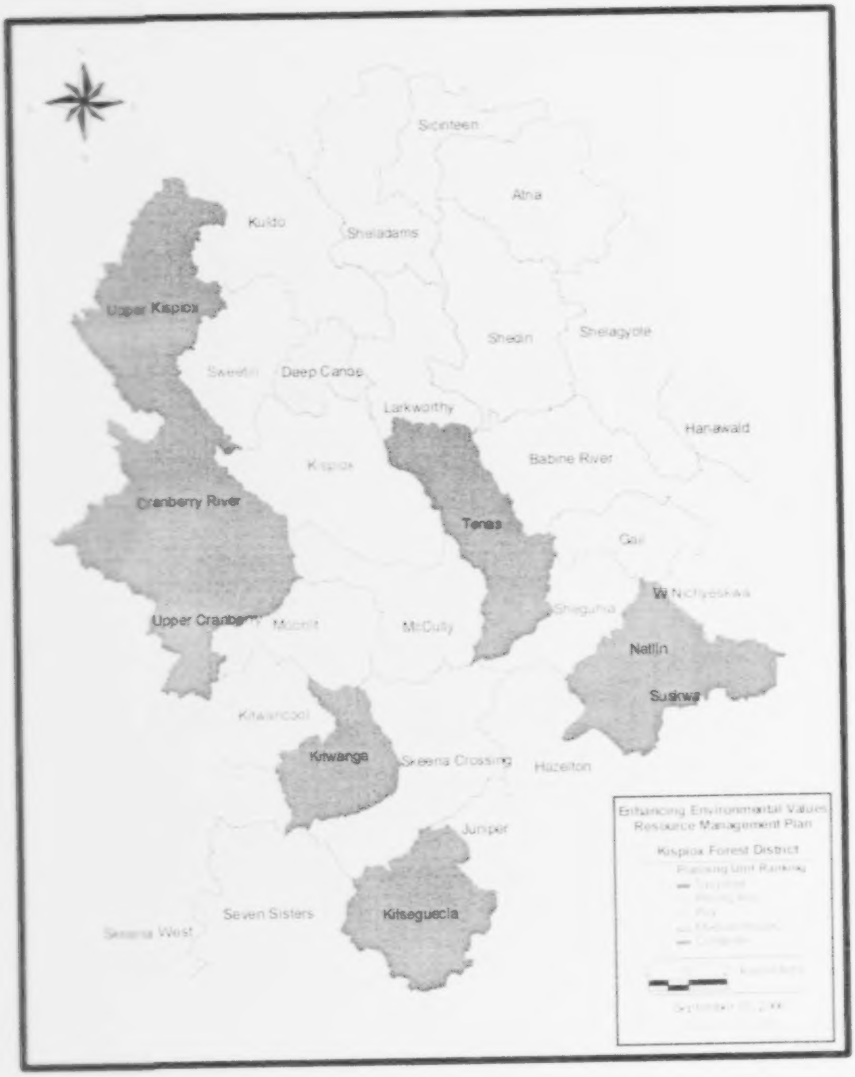
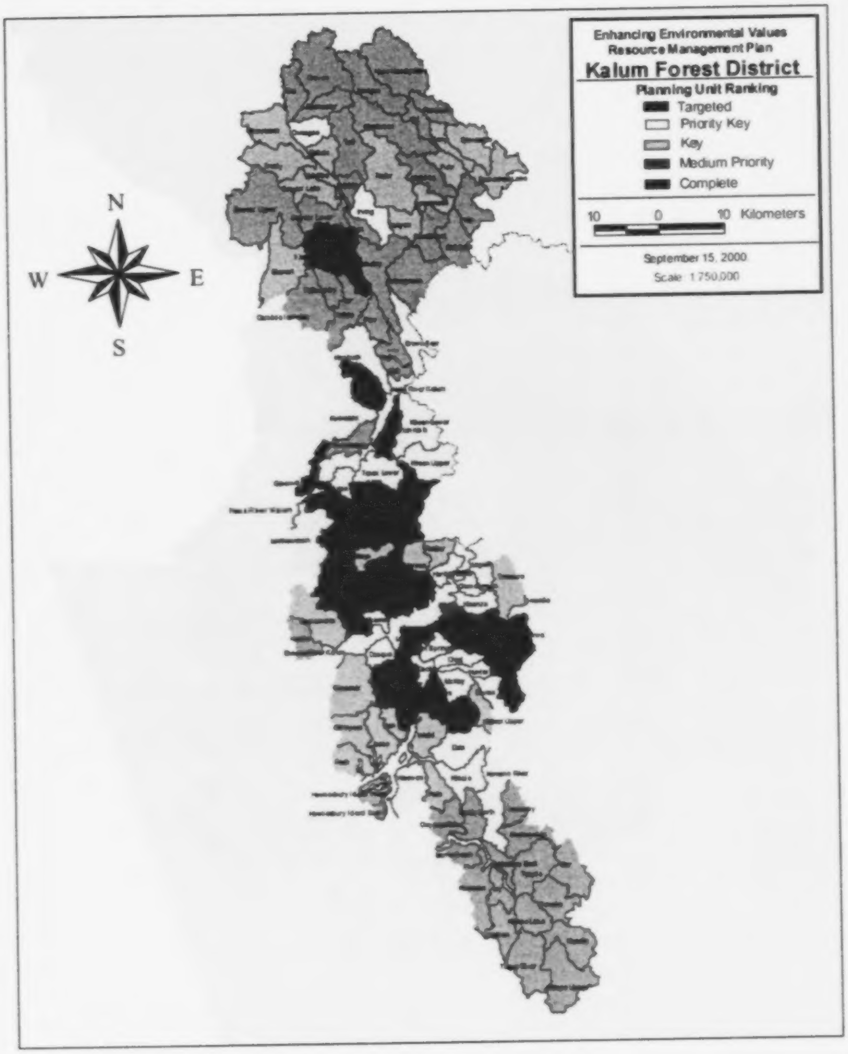

Sicinteen
Atna
Kuldo
Sheladamis
Upper Kispiox
Shedin
Shelagyote
Sweetin
Deep Canoe
Larkworthy
Hanawald
Kispiox
Babine River
Cranberry River
Tenas
Gail
Nichyeskwa
Shegunia
Upper Cranberry
Moonlit
McCully
Natlin
Suskwa
Kitwancool
Kitwanga
Skeena Crossing
Hazelton
Juniper
Seven Sisters
Skeena West
Kitseguecla
Enhancing Environmental Values
Resource Management Plan
Kispiox Forest District
Planning Unit Ranking
Kilometers


Enhancing Environmental Values
Resource Management Plan
Kalum Forest District
Planning Unit Ranking
Targeted
Priority Key
Key
Medium Priority
Complete
10 0 10 Kilometers
September 15, 2000
Scale 1:750,000
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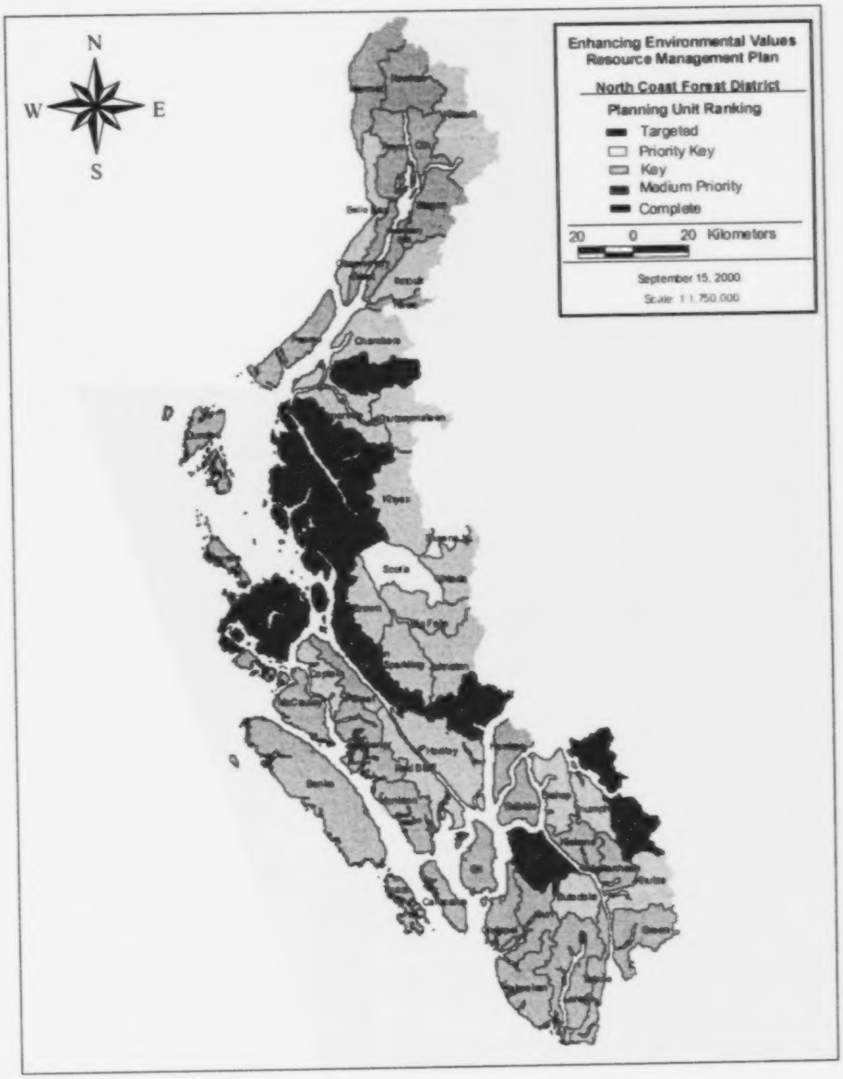
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Enhancing Environmental Values
Resource Management Plan
North Coast Forest District
Planning Unit Ranking
Targeted
Priority Key
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Medium Priority
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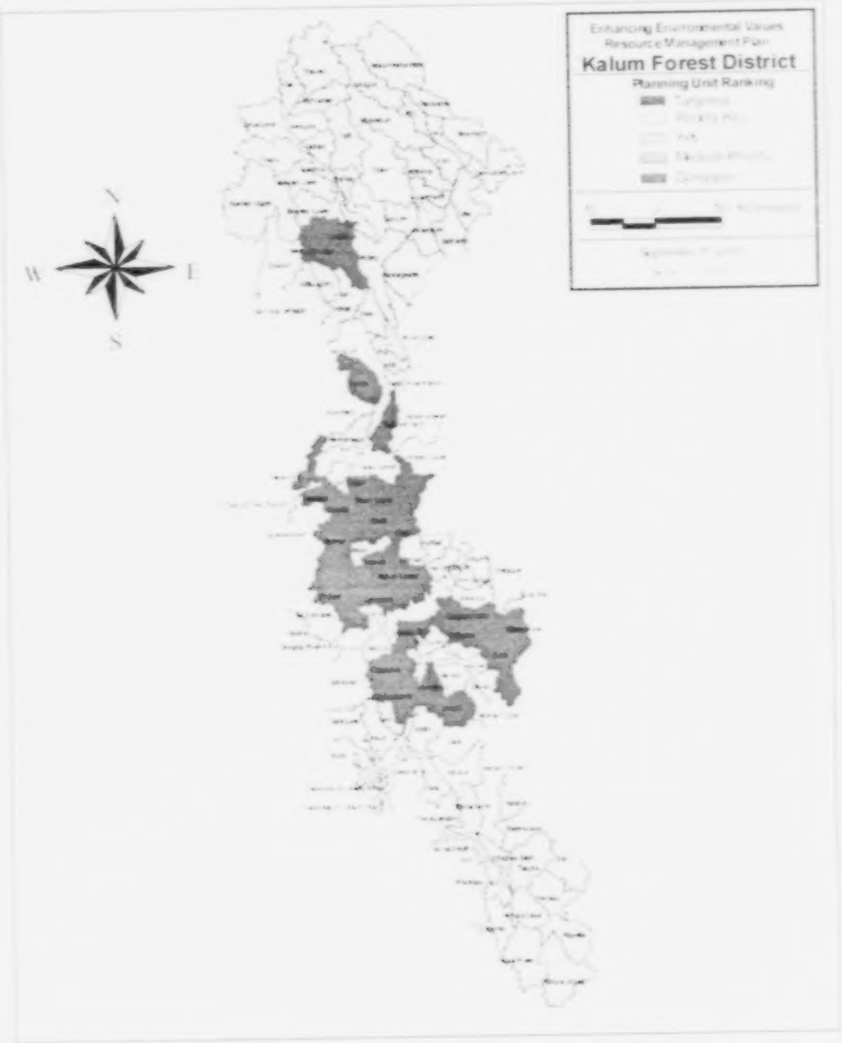
September 15, 2000
Scale 1:1,750,000
Scotia


Enhancing Environmental Values
Resource Management Plan
Kalum Forest District
Planning Unit Ranking
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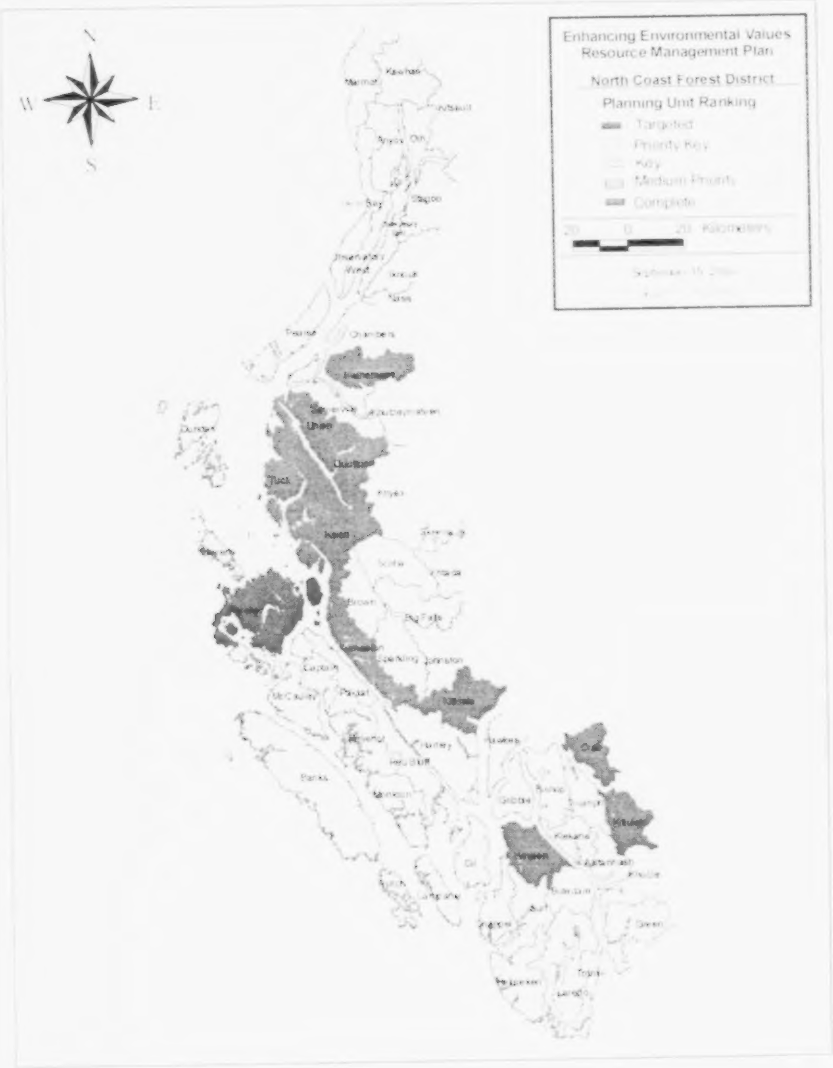
Enhancing Environmental Values
Resource Management Plan
North Coast Forest District
Planning Unit Ranking
Targeted
Priority Key
Key
Medium Priority
Complete
20 0 20 Kilometers
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W
E
S
Chambers
Dundas
Tuck
Banks

B. MANAGEMENT UNIT RMP CONTACT AND SUPPORT PERSONNEL

North Coast Management Unit Contact and Support Personnel list: Ken Hall Western Forest Products-FRBC Co-ordinator 250-286-4120, Lance Logan, Damion Keating Western Forest Products-250-635-6336, Owen Fewer Interfor-250-615 6766, Kelly Sawchuk North Coast MoF-250-624-7460 Jeff Lough MELP. DFO Prince Rupert Office, Michele Patterson Coastal Fisheries Development Centre 250-624-8566. Copies of various correspondence for development of PU EEV with agencies, stakeholders and MYA holders may be obtained by contacting Kelly Sawchuk and MoF North Coast.

Kalum Management Unit Contact and Support Personnel list: Ralph Ottens, MoF; Lance Logan, Damion Keating Western Forest Products; Lyle Bolton, Lars Reese-Hansen Kalum Band Council; Ralph Robinson, Nisga'a Tribal Council; Kim Hayworth, Skeena Cellulose; Whitney Lukuku, Haisla Band Council; Howard Debeck, MoF; Chris Broster, Jeff Lough MELP

Kispiox Management Unit Contact and Support Personnel list: Alan Harrison MoF; Jeff Lough, MELP.

Bulkley Management Unit Contact and Support Personnel list: Grant Marleau, Glen Buhr MoF; Jay Baker, PIR; Mike Bandstra SCI; Tom Pendray of DFO was invited to participate in the exercise but due to resourcing limitations would like to comment on the draft document only; Jeff Lough, MELP.

Morice Management Unit Contact and Support Personnel list: John Thibeau Morice District MoF, John Brockley, Canadian Forest Products, Diedre Quinlan Houston Forest Products; Jeff Lough, MELP

Lakes Management Unit Contact and Support Personnel list: Keith Van Tine, MoF; Denys Bell, Diedre Quinlan, Weldwood Forest Products; Greg Vandolah West Fraser Sawmills; Bert mast, FRBC; Jeff Lough, MELP

C. REFERENCES SUPPORTING EEV COMPONENT

Anonymous. 1998. *Living Blueprint for BC Salmonid Habitat*. Pacific Salmon Foundation. Published by an Independent Panel.

Haas, G.R. 1998. *Indigenous fish species potentially at risk in BC with recommendations and prioritization's for conservation forestry/resource use,inventory and research*, Fisheries Management report No. 105, Ministry of Fisheries, Vancouver, BC

Cannings, SG and J. Ptolmey. 1998. *Rare Freshwater Fish of British Columbia*. Ministry of Environment, Lands and Parks, Victoria, BC

6.0 NON-STATUS ROAD DEACTIVATION & REHABILITATION

6.1 Regional Summary of Deactivation and Rehabilitation Issues and Priorities Relating to Non-Status Roads

Not all districts have an inventory of non-status roads and, therefore, do not have adequate information to determine associated costs for remediation works. The initial process will be to compile an inventory of all non-status roads and then identify on the Forest Development Plan which roads should be rehabilitated and which ones should be deactivated.

The roads will then be identified to identify projects that do not meet the current funding priorities in the Enhancing Environmental Values folder (formerly Watershed Restoration Program (WRP)).

The roads will then be inspected with cost estimates prepared for remediation or deactivation works. Those roads not funded under EEV will then be prioritized based on high environmental values or known high risk areas.

6.2 Lakes Forest District Issues and Priorities

Current road inspections will determine which roads are non-status roads. A list of these roads with outstanding needs and risk rankings will be available by Dec 31,2000.

6.3 Morice Forest District Issues and Priorities

At this time, the Morice Forest District has not indicated a need for non-status road deactivation and rehabilitation.

6.4 Bulkley-Cassiar Forest District Issues and Priorities

The objectives of the Bulkley-Cassiar Forest District's Engineering Resource Management Plan are to protect investment in roads (both Forest Service and non-status roads), to protect the environment (specifically fisheries values, water quality and restoration of natural drainages), and to ensure continued user safety.

Cassiar TSA has a backlog of non-status roads resulting from old mineral exploration activities. Bulkley TSA has few, but this number will grow as licensees return responsibility for permit roads to government following deactivation.

Non-status roads shall be inspected periodically, and rehabilitation measures prescribed where conditions warrant. Immediate priorities for Bulkley TSA include road systems in the McKendrick Pass, Telkwa and Blunt areas. There are currently no priority road systems identified for Cassiar TSA.

6.4.1 Data Table

Non-Status Road Deactivation and Rehabilitation

Fiscal: 2001/2002 TOTAL $ 10,000

District	RMP Watershed Number	Watershed Name	Project Name	Proponent	Activity	Units	Estimated Cost	Priority	Benefit to
DBC (Bulkley TSA)		McKendrick	Inspection	MoF			$ 2,500	M	Environment
		McKendrick	Bridge Removal	MoF		1	$ 7,500	M	Public Safety

Fiscal: 2002/2003 TOTAL $ 2,500

District	RMP Watershed Number	Watershed Name	Project Name	Proponent	Activity	Units	Estimated Cost	Priority	Benefit to
DBC (Bulkley TSA)		Telkwa	Inspection	MoF			$ 2,500	M	Environment

Fiscal: 2003/2004 TOTAL $ 2,500

District	RMP Watershed Number	Watershed Name	Project Name	Proponent	Activity	Units	Estimated Cost	Priority	Benefit to
DBC (Bulkley TSA)		Blunt, Kitseguecla	Inspections	MoF			$ 2,500	M	Environment

6.5 Kispiox Forest District Issues and Priorities

Currently the Kispiox Forest District does not have an inventory of non-status roads and as a result does not have adequate information to determine associated costs for remediation works. The initial process will be to compile an inventory of all non-status roads in order to identify projects that do not meet the current funding priorities under the enhanced environmental values (watershed restoration) program. Once the inventory is completed decisions can then be made regarding individual projects.

The initial inventory could be completed in-house through the co-op student program; however, additional detailed surveys and designs may be required on a site by site basis. Projects eligible for FRBC funding will have to meet the criteria and priorities established in the enhanced environmental values (watershed restoration) program. Those areas falling outside the mandate of FRBC would have to be funded by voted funds and/or possible cost shares with other funding sources.

Inventory priority will be based on the following:

- watersheds that are currently funded by FRBC. This will result in the completion of all priority restorations activities within active watersheds.
- watersheds with high environmental values or known high risk areas.
- watersheds with a high density of historical logging.

6.6 Kalum Forest District Issues and Priorities

The Kalum Forest District priority projects and associated issues are as follows:

- Scully--This is a very active alluvial fan that was logged in the 1960's. It is adjacent to Mount Layton Hotsprings and is crossed by Hwy. 37, BC Hydro lines and PNG gas lines. The area is underlain by highly sensitive marine clays. Aggrading and degradation of the fan is threatening the above utilities, the hot springs, and private property. Funding would be used to reactivate the Scully Creek committee, review, upgrade and complete the plans to stabilize the fan.
- Humphreys group--Hwy. 37 between the Kitimat River bridge and Kitimat is paralleled by an off-highway mainline built in the 1960's. There are a number of heavy bridge structures still in place on the old M/L which could blow out in a rain-on-snow or other flood event, and endanger the highway, Hydro line, and gas line.
- Alice Creek--This very active fan has the potential of affecting a Hydro tower as well as two sections of private land.
- Amsbury to Exstew--There are five known in-block stream crossings on steep slopes that have a very high potential of blowing out. Consequences are damage to the CNR, Hwy. 16, power and phone service, public safety, plantations and aesthetics.
- CPU Roads--These roads and trails were built in the 1970-80's by crawler tractors pushing overburden over stumps. Annosus root rot has incubated in these areas and fast growing second growth roots have come into contact with the fungus. Consequently, infection is spreading up to one metre per year.
- Wedeene Slide--The toe of a semi-stable slope was destabilized during road construction in the 1970's. This road is identified as an emergency route by the District of Kitimat, as required by the Provincial Emergency Program (PEP). The failing slope frequently blocks the road. Bio-engineering techniques are required for stabilization.

6.6.1 Data Table

Non-Status Road Deactivation and Rehabilitation

Fiscal: 2001/2002

TOTAL $ 295,000

District	RMP Watershed Number	Watershed Name	Project Name	Proponent	Activity	Units	Estimated Cost	Priority	Benefit to
DKM		Hotsprings	Scully	MOF	RD	1	$ 30,000 (planning ¢)	1	Infastructure
DKM		Humphrey	Humphreys group	MOF	RD	5	$ 45,000	1`	Infastructure
DKM		Kalum	Alice Creek	MOF	RD/HR	1	$ 65,000	2	Infastructure and private property
DKM		Lower Skeena River	Amsbury to Exstew	MOF	RD	5	$ 45,000	1	Infastructure, plantation, safety, aesthetics and private property
DKM		Kalum Cecil	CPU roads	MOF	RD	50	$ 40,000	2	Plantation
DKM		Wedeene	Wedeene slide	MOF	HR	1	$ 70,000	1	Infastructure, safety and access

6.7 North Coast Forest District Issues and Priorities

The majority of harvesting related roads or up-slope values with high risk impacts outstanding are very minimal and not an issue in this planning unit. Solicitation to industry only identified isolated small local impacts that generally are captured under Enhancing Environmental Values Component. Continued monitoring and evaluation will capture local incidents as identified.

North Coast District Office requested Licensees to identify and submit as per the form and guidelines roads and rehabilitation locations. All requests came back with no issues. Further refinement of landscape units to sub-basin level in the WRP component may isolate some local sections of Non-Status Road from EEV funding. Should this occur a very minor issue for inclusion in this component could exist in additional years.

7.0 FOREST SERVICE ROAD (FSR) MANAGEMENT PROGRAM

7.1 FSR Regional Issues and Priorities

The goals and objectives for Forest Service Roads are to maintain roads and stream crossings to a level consistent with the Forest Practices Code requirements to:

- Ensure that FSRs are maintained to a level which promotes the safe use for the extraction of timber and the safety of the public users.
- Protect the structural integrity of the roads, right-of-way, bridges, and culverts.
- Minimize the impacts of sediment transportation from the road prism on other resources.
- Ensure that safe fish passage is provided at stream crossings where there has been sufficient information collected to ensure that there is habitat upstream of the crossings.

All FSRs are inspected on an annual basis and more frequently in high risk areas and after major storm events, with annual maintenance plans developed based on the inspections. Maintenance includes: grading, ditch cleaning, removal of danger trees, brushing to maintain safe sight distances, stabilization of unstable slopes, regravelling of roads with inadequate surfacing plus bridge and culvert maintenance.

There is also a major program to replace worn out bridges and culverts on FSRs with new structures. Whereas the ranking for the replacement of structures under the Bridge Replacement Program is based primarily on fibre flow, the ranking for road maintenance is based on the criteria shown on Table 1 below.

Table 1: Priority Criteria

High (H)	Legal requirement under Code. Continuing adverse impacts on public safety and the nature of the use of the road is such that it is not possible to close or to deactivate the road to eliminate the risk; such as: 1. Personal injury due to landslides or mass wasting, washouts, insufficient sight distance; 2. Damage to private property/utilities due to landslides, washouts; 3. Serious long-term damage to fish habitat and water quality due to sedimentation, mass wasting.
Moderate (M)	Legal requirement under the Code. Where: 1. There is an opportunity to close roads or temporarily deactivate roads to reduce risk to public safety, i.e. during heavy rainfall, stream freshets, or where alternate access to the public facility exists. 2. Damage to property/utilities can be readily mitigated. 3. Impacts on fish habitat and water quality are short term in nature.
Low (L)	Legal requirement under Code 1. Where the resources at risk are not present or the potential failures will create little or no impact or resources.

The Forest Development Plan (FDP) will include maps and schedules which indicate the location of all existing FSRs as well as the location of all roads and structures to be constructed and modified. The FDP will also include a road maintenance schedule which indicates which FSRs are maintained by the ministry and which ones are maintained by licensees under road permit.

The district will inspect and prepare inspection reports for all FSRs for which they are responsible at least once a year while major structures will be inspected every three years. Licensee's maintenance plans will be reviewed while a sample of their maintenance practices will be reviewed or audited annually. Bridge inspections for surface maintenance will be carried out as a component of road inspections while structural inspections will be carried out by region.

Tables will be prepared annually which detail the required maintenance, modification or replacement work along with the cost of completing the work. This work will be ranked in order of the criteria listed under regional issues and priorities.

7.2 Lakes Forest District FSR Issues and Priorities

To date, Lakes Forest District has 1,302 km of Forest Service roads with an average of 40 km of new road added each year. It is anticipated that most roads within the Small Business Chart area are primarily developed, so these numbers may reach a steady state. This plan requires that (unless otherwise specified) most roads be maintained for continued use.

Previous inspections indicate that our District FSR's are in relatively good shape; however, there is a backlog of pre-code issues that need to be addressed to bring roads up to current standards. After this year's major brushing and gravelling contracts are completed, we have approx. $600,000 in outstanding maintenance (i.e. gravelling).

Replacement structures may be a larger item though, road and stream inventories have shown that many existing structures are undersized, or fish barriers. As surveys continue, replacement structures will be identified. We are currently aware of approx. 20 that need replacement, most of these will be bridges or major culverts.

Our District objective is to ensure all roads meet or exceed minimal standards. New roads require minimum class 5 standard with gravel, for cost effectiveness over the long term.

Currently all FSR's are being inspected to determine where high risks areas are located, and to define maintenance needs. Inspection sheets are summarized and schedules updated annually. All active roads receive at minimum, annual inspections. As per FPC requirements, all major structures are inspected every three (3) years, bridges are formally inspected by a qualified P.Eng, while Major culverts are inspected by a qualified inspector (usually District Staff). Major storm events require prompt inspection of all medium to high risk roads, and major structures. Aerial flights are combined with visual ground inspections to check for damage or hazards.

As our Access Management Plan indicates, we intend to keep most of our roads open and maintained. Maintenance costs are low because the standard of construction is good. After the backlog is complete, all FSR's will be gravelled and stabilized. Our District objective is to ensure drainage structures have increased use of rip rap to prevent scouring and down cutting at outlets. Main haul roads should be considered for improved surfacing (calcium) for safety, and reduced long term maintenance costs.

The Mountain Pine Beetle Salvage program has put additional use onto most roads, this requires additional maintenance and inspections (typically, ditches are plugged and culverts damaged).

7.2.1 FSR Data Table

FOR YEAR 2001/2002
DISTRICT LAKES

ACTIVITY	ACCOUNT	PRIORITY	OUTPUT	OUTPUT		ESTIMATED COSTS			TOTAL	BUDGET	ACTUAL	COMMENTS
			UNITS	GOALS	BASE $	CUMUL. BASE $	INCR. $	CUMUL. INCR. $	EST. $	ALLOC.	COSTS	
Fixed Costs (region $):												
Management Planning	*40801*				10,000							
Right-of-way acquisition	*40802*	H	NO.			0	0		0			
emergency repairs	*40803*	H	NO.			0	0		0			
inspection of bridges/major culverts	*40804*	H	NO.	75	15,000	0	0		0			
railway crossing maint.	*40805*	H	NO.			0	0		0			
subtotal						25,000			0			
Surface Maintenance	*40805*	H	KM	25	75,000	0	0	0	0			
		M	KM	10	0	0	25,000	0	0			
(e.g., grading, brushing, ditch cleanout, bridge deck cleaning and repair)		L	KM		0	0		0	0			
subtotal						75,000		25,000	0			
Modification-Bridge and	*40806*	H	NO.	2	140,000	0	0	0	0			Mt. Colley 14 Km & Maxan 28 Km Binta 25.7 Km & Maxan-Equity 24 Km
Major Culvert Replacement		M	NO.	2	0	0	90,000	0	0			
		L	NO.		0	0		0	0			
subtotal						140,000		90,000				
Modification-Other Works	*40807*	H	NO.			0	0	0	0			
		M	NO.		0	0		0	0			
(e.g., road relocation, stream culvert replacement, road stability repair)		L	NO.		0	0		0	0			
subtotal									0			
Road Deactivation	*40808*	H	KM			0	0	0	0			
		M	KM		0	0		0	0			
		L	KM		0	0		0	0			
subtotal									0			
TOTAL						240,000		115,000				

FOR YEAR 2002/2003 DISTRICT LAKES

ACTIVITY	ACCOUNT	PRIORITY	OUTPUT	OUTPUT		ESTIMATED COSTS			TOTAL	BUDGET	ACTUAL	COMMENTS
			UNITS	GOALS	BASE $	CUMUL. BASE $	INCR. $	CUMUL. INCR. $	EST. $	ALLOC.	COSTS	
Fixed Costs (region $):												
Management Planning	40801				10,000							
Right-of-way acquisition	40802	H	NO.			0	0		0			
emergency repairs	40803	H	NO.			0	0		0			
inspection of bridges/major culverts	40804	H	NO.			0	0		0			
railway crossing maint.	40805	H	NO.			0	0		0			
subtotal						10,000			0			
Surface Maintenance	40805	H	KM	25	75,000		0	0				
		M	KM	10	0	0	25,000					
(e.g., grading, brushing, ditch cleanout, bridge deck cleaning and repair)		L	KM		0	0		0	0			
subtotal						75,000		25,000	0			
Modification-Bridge and Major Culvert Replacement	40806	H	NO.	3	150,000		0	0	0			Francois Ext. 81,82 & 83 Km
		M	NO.	1	0	0	50,000		0			Mt. Colley - 1 Km
		L	NO.		0	0		0	0			
subtotal						150,000		50,000	0			
Modification-Other Works	40807	H	NO.			0	0	0	0			
		M	NO.		0	0		0	0			
(e.g., road relocation, stream culvert replacement, road stability repair)		L	NO.		0	0		0	0			
subtotal									0			
Road Deactivation	40808	H	KM			0	0	0	0			
		M	KM		0	0		0	0			
		L	KM		0	0		0	0			
subtotal									0			
TOTAL					0	235,000	0	75,000	0			

FOR YEAR 2003/2004 DISTRICT LAKES

ACTIVITY	ACCOUNT	PRIORITY	OUTPUT	OUTPUT		ESTIMATED COSTS			TOTAL	BUDGET	ACTUAL	COMMENTS
			UNITS	GOALS	BASE $	CUMUL. BASE $	INCR. $	CUMUL. INCR. $	EST. $	ALLOC.	COSTS	
Fixed Costs (region $):												
Management Planning	*40801*				10,000							
Right-of-way acquisition	*40802*	H	NO.			0	0		0			
emergency repairs	*40803*	H	NO.			0	0		0			
inspection of bridges/major culverts	*40804*	H	NO.			0	0		0			
railway crossing maint.	*40805*	H	NO.			0	0		0			
subtotal						10,000			0			
Surface Maintenance	*40805*	H	KM	25	75,000	0	0	0	0			
		M	KM	10	0	0	25,000	0	0			
(e.g., grading, brushing, ditch cleanout, bridge deck cleaning and repair)		L	KM		0	0		0	0			
subtotal						75,000		25,000	0			
Modification-Bridge and Major Culvert Replacement	*40806*	H	NO.	3	150,000	0	0	0	0			
		M	NO.	1	0	0	50,000	0	0			
		L	NO.		0	0		0	0			
subtotal						150,000		50,000				
Modification-Other Works	*40807*	H	NO.			0	0	0	0			
		M	NO.		0	0		0	0			
(e.g., road relocation, stream culvert replacement, road stability repair)		L	NO.		0	0		0	0			
subtotal									0			
Road Deactivation	*40808*	H	KM			0	0	0	0			
		M	KM		0	0		0	0			
		L	KM		0	0		0	0			
subtotal									0			
TOTAL						235,000		75,000				

7.3 Morice Forest District FSR Issues and Priorities

The District strategy is to ensure that all the roads which the District is responsible for maintaining will show up on the SBFEP Forest Development Plan. This will also include a road maintenance schedule which indicates which FSR's are maintained by Licensee's under Road Use Permits.

Over the next three years, our approach to the FSR's, is to bring the roads up to a standard which will require reduced maintenance levels and lower costs in the long term. Some of these roads have had reduced levels of maintenance as the funding levels have been low. We have scheduled aggressive levels of brushing and ditch and culvert repairs in the next three years. If works progress and are achieved at lower costs in the first year, then the production will increase and the next year's cost will reflect the savings at RMP review time.

7.3.1 FSR Data Table

FOR YEAR 2001/2002 DISTRICT MORICE

ACTIVITY	ACCOUNT	PRIORITY	OUTPUT UNITS	OUTPUT GOALS	BASE $	ESTIMATED COSTS CUMUL. BASE $	INCR. $	CUMUL. INCR. $	TOTAL EST. $	BUDGET ALLOC.	ACTUAL COSTS	COMMENTS
Fixed Costs (region $):												
Management Planning	40801											
Right-of-way acquisition	40802	H	NO.		60,000	0	0		0			
emergency repairs	40803	H	NO.			0	0		0			
inspection of bridges/major culverts	40804	H	NO.			0	0		0			
railway crossing maint.	40805	H	NO.			0	0		0			
subtotal						60,000			0			
Surface Maintenance	40805	H	KM	99.5	370,000	0	0	0	0			Brushing, grading & resurfacing
		M	KM		0	0	0	0	0			
(e.g., grading, brushing, ditch cleanout, bridge deck cleaning and repair)		L	KM		0	0		0	0			
subtotal						370,000		0	0			
Modification-Bridge and	40806	H	NO.	3	285,000	0	0	0	0			Tochcha E. (8 Km) Hautee (12 Km) and Hagan (39 Km)
Major Culvert Replacement		M	NO.		0	0	0	0	0			
		L	NO.		0	0		0	0			
subtotal						285,000		0				
Modification-Other Works	40807	H	NO.	0.6	100,000	0	0	0	0			Morice - safety related road relocation
		M	NO.		0	0		0	0			
(e.g., road relocation, stream culvert replacement, road stability repair)		L	NO.		0	0		0	0			
subtotal						100,000			0			
Road Deactivation	40808	H	KM			0	0	0	0			
		M	KM		0	0		0	0			
		L	KM		0	0		0	0			
subtotal									0			
TOTAL						815,000						

FOR YEAR 2002/2003 DISTRICT MORICE

ACTIVITY	ACCOUNT	PRIORITY	OUTPUT UNITS	OUTPUT GOALS	BASE $	ESTIMATED COSTS CUMUL. BASE $	INCR. $	CUMUL. INCR. $	TOTAL EST. $	BUDGET ALLOC.	ACTUAL COSTS	COMMENTS
Fixed Costs (region $):												
Management Planning	40801											
Right-of-way acquisition	40802	H	NO.		0	0	0		0			
emergency repairs	40803	H	NO.		0	0	0		0			
inspection of bridges/major culverts	40804	H	NO.		0	0	0		0			
railway crossing maint.	40805	H	NO.		0	0	0		0			
subtotal									0			
Surface Maintenance	40805	H	KM	99.5	334,000	0	0	0	0			Brushing, grading & resurfacing
		M	KM		0	0	0	0	0			
(e.g., grading, brushing, ditch cleanout, bridge deck cleaning and repair)		L	KM		0	0		0	0			
subtotal						334,000	0	0	0			
Modification-Bridge and Major Culvert Replacement	40806	H	NO.	1	190,000	0	0	0	0			Hautee Creek (7 Km)
		M	NO.	2	0	0	80,000	0	0			Tochcha W (4 and 12 Km)
		L	NO.		0	0		0	0			
subtotal						190,000		80,000				
Modification-Other Works	40807	H	NO.			0	0	0	0			
		M	NO.		0	0		0	0			
(e.g., road relocation, stream culvert replacement, road stability repair)		L	NO.		0	0		0	0			
subtotal									0			
Road Deactivation	40808	H	KM			0	0	0	0			
		M	KM		0	0		0	0			
		L	KM		0	0		0	0			
subtotal									0			
TOTAL						524,000		80,000				

FOR YEAR 2003/2004 DISTRICT MORICE

ACTIVITY	ACCOUNT	PRIORITY	OUTPUT	OUTPUT		ESTIMATED COSTS			TOTAL	BUDGET	ACTUAL	COMMENTS
			UNITS	GOALS	BASE $	CUMUL. BASE $	INCR. $	CUMUL. INCR. $	EST. $	ALLOC.	COSTS	
Fixed Costs (region $):												
Management Planning	40801											
Right-of-way acquisition	40802	H	NO.		0	0	0		0			
emergency repairs	40803	H	NO.		0	0	0		0			
inspection of bridges/major culverts	40804	H	NO.	100	20,000	0	0		0			
railway crossing maint.	40805	H	NO.			0	0		0			
subtotal						20,000			0			
Surface Maintenance	40805	H	KM	99.5	336,000	0	0	0	0			
		M	KM	10	0	0	0	0	0			
(e.g., grading, brushing, ditch cleanout, bridge deck cleaning and repair)		L	KM		0	0		0	0			
subtotal						336,000		0	0			
Modification-Bridge and	40806	H	NO.	2	160,000	0	0	0	0			Fulton FSR (10 Km) & Morice-Chisholm
Major Culvert Replacement		M	NO.		0	0	0	0	0			
		L	NO.		0	0		0	0			
subtotal						160,000		0				
Modification-Other Works	40807	H	NO.			0	0	0	0			
		M	NO.		0	0		0	0			
(e.g., road relocation, stream culvert replacement, road stability repair)		L	NO.		0	0		0	0			
subtotal									0			
Road Deactivation	40808	H	KM			0	0	0	0			
		M	KM		0	0		0	0			
		L	KM		0	0		0	0			
subtotal									0			
TOTAL						516,000						

7.4 Bulkley-Cassiar Forest District FSR Issues and Priorities

The objectives of the Bulkley-Cassiar Forest District's Engineering Resource Management Plan are to protect investment in roads (both Forest Service and non-status roads), to protect the environment (specifically fisheries values, water quality and restoration of natural drainages), and to ensure continued user safety.

All Forest Service Roads are inspected on an annual basis (more frequently if in an area at high risk due to presence of steep slopes or sensitive terrain, or after significant weather events). An annual maintenance program is developed the same year based on these inspections.

In regards to public safety in Bulkley TSA, the Nilkitkwa FSR is the focus of concern. The village of Fort Babine is located at Kilometer 41, and the new Babine River Corridor Provincial Park is located at Kilometer 58. This area experiences heavy recreational use, mainly during the summer and fall seasons. The Forest Service provides some funding for extra maintenance on this road, particularly during the winter, with extra grading and sanding to ensure public safety.

7.4.1 FSR Data Table

FOR YEAR 2001/2002 DISTRICT BULKLEY/CASSIAR

ACTIVITY	ACCOUNT	PRIORITY	OUTPUT	OUTPUT		ESTIMATED COSTS			TOTAL	BUDGET	ACTUAL	COMMENTS
			UNITS	GOALS	BASE $	CUMUL. BASE $	INCR. $	CUMUL. INCR. $	EST. $	ALLOC.	COSTS	
Fixed Costs (region $):												
Management Planning	40801											
Right-of-way acquisition	40802	H	NO.			0	0		0			Based on historical costs
emergency repairs	40803	H	NO.		15,000	0	0		0			
inspection of bridges/major culverts	40804	H	NO.		0	0	0		0			
railway crossing maint.	40805	H	NO.			0	0		0			
subtotal						15,000			0			
Surface Maintenance	40805	H	KM	41	35,000	0	0	0	0			Nilkitkwa - grading & snow ploughing
		M	KM		0	0	0	0	0			
(e.g., grading, brushing,		L	KM		0	0		0	0			
ditch cleanout, bridge												
deck cleaning and repair)												
subtotal						35,000		0	0			
Modification-Bridge and	40806	H	NO.	2	130,000	0	0	0	0			Nilkitkwa (46.9 Km & 49.9 Km)
Major Culvert Replacement		M	NO.	2	0	0	85,000	0	0			McDonell (0.3 Km & 3.0 Km)
		L	NO.		0	0		0	0			
subtotal						130,000		85,000				
Modification-Other Works	40807	H	NO.			0	0	0	0			
		M	NO.		0	0		0	0			
(e.g., road relocation, stream		L	NO.		0	0		0	0			
culvert replacement, road												
stability repair)												
subtotal									0			
Road Deactivation-Reference	40808	H	KM			0	0	0	0			
Separate Tables		M	KM		0	0		0	0			
		L	KM		0	0		0	0			
subtotal									0			
TOTAL						180,000		85,000				

FOR YEAR 2002/2003 DISTRICT BULKLEY/CASSIAR

ACTIVITY	ACCOUNT	PRIORITY	OUTPUT UNITS	OUTPUT GOALS	BASE $	ESTIMATED COSTS CUMUL. BASE $	INCR. $	CUMUL. INCR. $	TOTAL EST. $	BUDGET ALLOC.	ACTUAL COSTS	COMMENTS
Fixed Costs (region $):												
Management Planning	40801											
Right-of-way acquisition	40802	H	NO.			0	0		0			
emergency repairs	40803	H	NO.	1	15,000	0	0		0			
inspection of bridges/major culverts	40804	H	NO.		0	0	0		0			
railway crossing maint.	40805	H	NO.		0	0	0		0			
subtotal						15,000			0			
Surface Maintenance	40805	H	KM	41	35,000	0	0	0	0			Nilkitkwa
		M	KM		0	0	0	0	0			
(e.g., grading, brushing, ditch cleanout, bridge deck cleaning and repair)		L	KM		0	0		0	0			
subtotal						35,000			0			
Modification-Bridge and	40806	H	NO.	2	140,000	0	0	0	0			Nilkitkwa 486 (4.6 Km & 16.5 Km)
Major Culvert Replacement		M	NO.		0	0	0	0	0			
		L	NO.		0	0		0	0			
subtotal						110,000		0				
Modification-Other Works	40807	H	NO.			0	0	0	0			
		M	NO.		0	0		0	0			
(e.g., road relocation, stream culvert replacement, road stability repair)		L	NO.		0	0		0	0			
subtotal									0			
Road Deactivation-Reference	40808	H	KM			0	0	0	0			
Separate tables		M	KM		0	0		0	0			
		L	KM		0	0		0	0			
subtotal									0			
TOTAL						190,000						

FOR YEAR 2003/2004 DISTRICT BULKLEY/CASSIAR

ACTIVITY	ACCOUNT	PRIORITY	OUTPUT	OUTPUT		ESTIMATED COSTS			TOTAL	BUDGET	ACTUAL	COMMENTS
			UNITS	GOALS	BASE $	CUMUL. BASE $	INCR. $	CUMUL. INCR. $	EST. $	ALLOC.	COSTS	
Fixed Costs (region $):												
Management Planning	40801											
Right-of-way acquisition	40802	H	NO.		0	0	0		0			Based on Historical costs
emergency repairs	40803	H	NO.	1	15,000	0	0		0			
inspection of bridges/major culverts	40804	H	NO.	100	20,000	0	0		0			
railway crossing maint.	40805	H	NO.			0	0		0			
subtotal						35,000			0			
Surface Maintenance	40805	H	KM	41	35,000	0	0	0	0			Nilkitkwa
		M	KM		0	0	0	0	0			
(e.g., grading, brushing, ditch cleanout, bridge deck cleaning and repair)		L	KM		0	0		0	0			
subtotal						35,000			0			
Modification-Bridge and	40806	H	NO.	1	225,000	0	0	0	0			Bulkley River Bridge
Major Culvert Replacement		M	NO.		0	0	0	0	0			
		L	NO.		0	0		0	0			
subtotal						225,000		0				
Modification-Other Works	40807	H	NO.			0	0	0	0			
		M	NO.		0	0		0	0			
(e.g., road relocation, stream culvert replacement, road stability repair)		L	NO.		0	0		0	0			
subtotal									0			
Road Deactivation-Reference	40808	H	KM			0	0	0	0			
Separate Tables		M	KM		0	0		0	0			
		L	KM		0	0		0	0			
subtotal									0			
TOTAL						295,000						

7.5 Kispiox Forest District FSR Issues and Priorities

Region is currently updating the Bridge registry for the District. Maintenance and replacement needs can only be addressed once the registry is completed.

Currently the Kispiox Forest District road registry is undergoing a major update including a scheduling of all maintenance issues. When this information becomes available it will be incorporated into the appropriate FSR Tables.

Inactivity on the part of Major Licencees and the Small Business Forest Enterprise Program within several areas of the District has defaulted basic maintenance obligations to the District. Of major concern are the Nass and the Suskwa FSRs.

The Suskwa FSR poses the single largest road issue within the District. Skeena Cellulose has proposed, in a major amendment to their Forest Development Plan, a road linkage between the Kispiox and Bulkley Forest Districts known as the Nicheyeskwa Connector. Should the Connector be approved by the Statutory Decision Makers in the two Districts, upgrades to the Suskwa FSR will be required. Loren Kelly, Peng, from PRFR has estimated upgrading costs to be upwards of $10,000,000. The investment would be required in order to provide a stable road base and road widenings to handle much increased traffic.

Regardless of the outcome of the Connector issue, several trouble spots have already been identified and will likely have to be addressed in the near future. These include road slumping at kilometres 14, 16, 20, 21, and 22.

7.5.1 FSR Data Table

FOR YEAR 2001/2002 DISTRICT KISPIOX

ACTIVITY	ACCOUNT	PRIORITY	OUTPUT	OUTPUT		ESTIMATED COSTS			TOTAL	BUDGET	ACTUAL	COMMENTS
			UNITS	GOALS	BASE $	CUMUL. BASE $	INCR. $	CUMUL. INCR. $	EST. $	ALLOC.	COSTS	
Fixed Costs (region $):												
Management Planning	40801				7,000							
Right-of-way acquisition	40802	H	NO.		0	0	0		0			
emergency repairs	40803	H	NO.		0	0	0		0			
inspection of bridges/major culverts	40804	H	NO.		0	0	0		0			
railway crossing maint.	40805	H	NO.		0	0	0		0			
subtotal						7,000			0			
Surface Maintenance	40805	H	KM	35	67,000	0	0	0	0			Grading, snow ploughing & brushing
		M	KM	6	0	0	6,000	0	0			
(e.g., grading, brushing, ditch cleanout, bridge deck cleaning and repair)		L	KM		0	0		0	0			
subtotal						67,000		6,000	0			
Modification-Bridge and Major Culvert Replacement	40806	H	NO.	3	290,000	0	0	0	0			McCutcheon, Nass 5.8 & Shewiliba Bridges
		M	NO.		0	0		0	0			
		L	NO.		0	0		0	0			
subtotal						290,000		0				
Modification-Other Works	40807	H	NO.	2	150,000	0	0	0				Suskwa - slope stabilize
		M	NO.		0	0	50,000	0	0			Suskwa road widening (Stat. Requirement)
(e.g., road relocation, stream culvert replacement, road stability repair)		L	NO.		0	0		0	0			
subtotal						150,000		50,000	0			
Road Deactivation	40808	H	KM		15,000	0	0	0	0			Remove failing culvert
		M	KM	18	0	0	15,000	0	0			
		L	KM	15.5	0	0	32,000	0	0			
subtotal						15,000		47,000	0			
TOTAL						529,000		103,000				

FOR YEAR 2002/2003 DISTRICT KISPIOX

ACTIVITY	ACCOUNT	PRIORITY	OUTPUT	OUTPUT		ESTIMATED COSTS			TOTAL	BUDGET	ACTUAL	COMMENTS
			UNITS	GOALS	BASE $	CUMUL. BASE $	INCR. $	CUMUL. INCR. $	EST. $	ALLOC.	COSTS	
Fixed Costs (region $):												
Management Planning	40801				7,000				0			
Right-of-way acquisition	40802	H	NO.		0	0	0		0			
emergency repairs	40803	H	NO.		0	0	0		0			
inspection of bridges/major culverts	40804	H	NO.		0	0	0		0			
railway crossing maint.	40805	H	NO.			0	0		0			
subtotal						7,000			0			
Surface Maintenance	40805	H	KM	35	67,000	0	0	0	0			Grading, snow ploughing & brushing
		M	KM	6	0	0	6,000	0	0			
(e.g., grading, brushing, ditch cleanout, bridge deck cleaning and repair)		L	KM		0	0		0	0			
subtotal						67,000		6,000	0			
Modification-Bridge and	40806	H	NO.	2	140,000	0	0	0	0			Derrik Main Bridges @ 3.1 Km & 6.3 Km
Major Culvert Replacement		M	NO.		0	0	0	0	0			
		L	NO.		0	0		0	0			
subtotal						140,000		0				
Modification-Other Works	40807	H	NO.	2	150,000	0	0	0	0			Suskwa - slope stabilization
		M	NO.		0	0		0	0			
(e.g., road relocation, stream culvert replacement, road stability repair)		L	NO.		0	0		0	0			
subtotal						150,000						
Road Deactivation	40808	H	KM			0	0	0	0			
		M	KM		0	0		0	0			
		L	KM		0	0		0	0			
subtotal									0			
TOTAL						364,000		6,000				

FOR YEAR 2003/2004 DISTRICT KISPIOX

ACTIVITY	ACCT	PRIORITY	OUTPUT UNITS	OUTPUT GOALS	BASE $	EST. COSTS CUMUL. BASE $	INCR. $	CUMUL. INCR. $	TOTAL EST. $	BUDGET ALLOC.	ACTUAL COSTS	COMMENTS
Fixed Costs (region $):												
Management Planning	40801				7,000							
Right-of-way acquisition	40802	H	NO.		0	0	0		0			
emergency repairs	40803	H	NO.		15,000	0	0		0			
inspection of bridges/major culverts	40804	H	NO.	100	20,000	0	0		0			
railway crossing maint.	40805	H	NO.			0	0		0			
subtotal						42,000			0			
Surface Maintenance	40805	H	KM	35	67,000	0	0	0	0			Grading & brushing
		M	KM	6	0	0	6,000	0	0			
(e.g., grading, brushing,		L	KM		0	0		0	0			
ditch cleanout, bridge												
deck cleaning and repair)												
subtotal						67,000		6,000	0			
Modification-Bridge and	40806	H	NO.	3	290,000	0	0	0	0			Bulkley Riv.& 31.5 & 31.6 Km Babine Slide
Major Culvert Replacement		M	NO.		0	0	0	0	0			
		L	NO.		0	0		0	0			
subtotal						290,000		0				
Modification-Other Works	40807	H	NO.	1	75,000	0	0	0	0			Suskwa - slope stabilization
		M	NO.		0	0		0	0			
(e.g., road relocation, stream		L	NO.		0	0		0	0			
culvert replacement, road												
stability repair)												
subtotal						75,000			0			
Road Deactivation	40808	H	KM			0	0	0	0			
		M	KM		0	0		0	0			
		L	KM		0	0		0	0			
subtotal									0			
TOTAL						474,000		6,000				

7.6 Kalum Forest District FSR Issues and Priorities

At this time, issues and priorities for the Kalum Forest District are unavailable.

7.6.1 FSR Data Table

FOR YEAR 2001/2002 DISTRICT KALUM

ACTIVITY	ACCT	PRIORITY	OUTPUT	OUTPUT		ESTIMATED COSTS			TOTAL	BUDGET	ACTUAL	COMMENTS
			UNITS	GOALS	BASE $	CUMUL. BASE $	INCR. $	CUMUL. INCR. $	EST. $	ALLOC.	COSTS	
Fixed Costs (region $):												
Management Planning	*40801*											
Right-of-way acquisition	*40802*	H	NO.		11,000	0	0		0			
emergency repairs	*40803*	H	NO.			0	0		0			
inspection of bridges/major culverts	*40804*	H	NO.			0	0		0			
railway crossing maint.	*40805*	H	NO.		3,600		0					
subtotal						14,600			0			
Surface Maintenance	*40805*	H	KM	150	125,000	0	0	0	0			
		M	KM	40	0	0	24,000	0	0			
(e.g., grading, brushing, ditch cleanout, bridge deck cleaning and repair)		L	KM		0	0		0	0			
subtotal						125,000		24,000	0			
Modification-Bridge and	*40806*	H	NO.	2	350,000	0	0	0	0			W. Kalum Cedar (17 Km & 20.3 Km)
Major Culvert Replacement		M	NO.		0	0	0	0	0			
		L	NO.		0	0		0	0			
subtotal						350,000						
Modification-Other Works	*40807*	H	NO.	1	80,000	0	0	0	0			Wedeene Slide
		M	NO.		0	0		0	0			
(e.g., road relocation, stream culvert replacement, road stability repair)		L	NO.		0	0		0	0			
subtotal						80,000			0			
Road Deactivation	*40808*	H	KM		100,000	0	0	0	0			
		M	KM		0	0		0	0			
		L	KM		0	0		0	0			
subtotal						100,000			0			
TOTAL						669,600		24,000				

FOR YEAR 2002/2003

DISTRICT KALUM

ACTIVITY	ACCT	PRIORITY	OUTPUT	OUTPUT		ESTIMATED COSTS			TOTAL	BUDGET	ACTUAL	COMMENTS
			UNITS	GOALS	BASE $	CUMUL. BASE $	INCR. $	CUMUL. INCR. $	EST. $	ALLOC.	COSTS	
Fixed Costs (region $):												
Management Planning	40801				10,500							
Right-of-way acquisition	40802	H	NO.			0	0		0			
emergency repairs	40803	H	NO.			0	0		0			
inspection of bridges/major culverts	40804	H	NO.	120	24,000	0	0		0			
railway crossing maint.	40805	H	NO.		3,600		0		0			
subtotal						38,100			0			
Surface Maintenance	40805	H	KM	150	125,000	0	0	0	0			
		M	KM	40	0	0	17,000	0	0			
(e.g., grading, brushing, ditch cleanout, bridge deck cleaning and repair)		L	KM		0	0		0	0			
subtotal						125,000		17,000	0			
Modification-Bridge and	40806	H	NO.	3	320,000	0	0	0	0			Wedeene (14.3 & 30 Km) & West Kalum 45 Km
Major Culvert Replacement		M	NO.		0	0		0	0			
		L	NO.		0	0		0	0			
subtotal						320,000						
Modification-Other Works	40807	H	NO.	1	80,000		0	0				Wedeene Slide
		M	NO.		0	0		0	0			
(e.g., road relocation, stream culvert replacement, road stability repair)		L	NO.		0	0		0	0			
subtotal						80,000			0			
Road Deactivation	40808	H	KM		100,000		0	0	0			
		M	KM		0	0		0	0			
		L	KM		0	0		0	0			
subtotal						100,000			0			
TOTAL						663,100		17,000				

FOR YEAR 2003/2004 DISTRICT KALUM

ACTIVITY	ACCOUNT	PRIORITY	OUTPUT	OUTPUT		ESTIMATED COSTS			TOTAL	BUDGET	ACTUAL	COMMENTS
			UNITS	GOALS	BASE $	CUMUL. BASE $	INCR. $	CUMUL. INCR. $	EST. $	ALLOC.	COSTS	
Fixed Costs (region $):												
Management Planning	*40801*				10,000							
Right-of-way acquisition	*40802*	H	NO.			0	0		0			
emergency repairs	*40803*	H	NO.			0	0		0			
inspection of bridges/major culverts	*40804*	H	NO.			0	0		0			
railway crossing maint.	*40805*	H	NO.		3,600		0					
subtotal						13,600			0			
Surface Maintenance	*40805*	H	KM	150	125,000	0	0	0	0			
		M	KM	40	0	0	10,000	0	0			
(e.g., grading, brushing, ditch cleanout, bridge deck cleaning and repair)		L	KM		0	0		0	0			
subtotal						125,000		10,000	0			
Modification-Bridge and Major Culvert Replacement	*40806*	H	NO.	9	645,000	0	0	0	0			
		M	NO.		0	0	0	0	0			
		L	NO.		0	0		0	0			
subtotal						645,000		0				
Modification-Other Works	*40807*	H	NO.	2	145,000	0	0	0				Wedeene Slide & Copper R/W
		M	NO.	1	0	0	40,000	0	0			bridge redecking
(e.g., road relocation, stream culvert replacement, road stability repair)		L	NO.		0	0		0	0			
subtotal						145,000		40,000	0			
Road Deactivation	*40808*	H	KM		100,000	0	0	0	0			
		M	KM		0	0		0	0			
		L	KM		0	0		0	0			
subtotal						100,000			0			
TOTAL						1,028,600		50,000				

7.7 North Coast Forest District FSR Issues and Priorities

The access in the North Coast Forest District (NCFD) is usually remote and extremely costly to construct and maintain. There are presently, only 83 kilometers of Forest Service Road of which, 22.4 km are not maintained by Small Business Forest Enterprise Program or any major licensee. Of these 22.4 km, 12.8 km are the Lachmach FSR and 9.6 kms are the Green River FSR. Both these FSRs, join Highway 16, near Prince Rupert. Both are heavily used by the public and in the case of the Lachmach FSR, used by Pacific Northern Gas Ltd. and Department of Fisheries and Oceans for access to their properties and improvements.

The objective is to bring two heavily used FSRs back to a standard that will ensure public safety, be environmentally sound and be easier to maintain. Both roads have high value fish habitat adjacent and suffer from unstable terrain. There is at least one major landslide per year that impact one of these roads. Access for public recreation is considered important for to the communities of Port Edward, Prince Rupert and Terrace.

Breakdown of Activities:

Management Plan:
Some flying to remote sites for access inspections or landslide data collection is required. General purchase of supplies is also included. An amount of $10,000 on an annual basis is considered sufficient to carry out these objectives.

Railway Crossing Maintenance:
The Lachmach FSR requires annual rental fees plus CNR maintenance costs for an annual total of $700.

Surface Maintenance:
Both the Lachmach and Green River FSRs were constructed in the 1970's. Road construction practices were generally poor and both roads suffer from inadequate "fines" for surfacing. Grading is not an option, as the roads have no "fines" to grade. There are rock quarries nearby that are suitable for setting up a crushing operation to provide capping. The initial costs are high, as crushing and delivery is expensive. The first 3 years for surface maintenance will range from $60,000 to $50,000 annually. The first year will be just to start crushing, there will be no hauling of surfacing. After 3-4 years, surface maintenance using a grader and odd spot surfacing will drop annual costs down to normal maintenance of about $6,000/year.

Modification-Bridge and Major Culvert Replacement:
There are two small permanent bridges proposed for Green River FSR in Year 2, (2002/2003). Access needs to be improved in Green River before these structures can be installed. Each bridge is assessed at $60,000, (materials and installation). The site plans have been prepared and work is subject to upgrading road to allow for mobilization of heavy equipment.

Modification-Other Works:

As stated under “Surface Maintenance”, both Green River and Lachmach FSR’s are in poor shape. Both roads have experienced considerable settling of the fill portions of the road prism and require shot-rock ballast to be built up before surfacing can be completed. Both roads also require additional small ditch-drain culverts to be installed. Installation in some cases will require blasting to allow for proper culvert depth. Since work can only be done during short windows due to fisheries constraints, the work has to be planned out over a number of years.

7.7.1 FSR Data Table

FOR YEAR 2001/2002 DISTRICT NORTH COAST

ACTIVITY	ACCT	PRIORITY	OUTPUT	OUTPUT		ESTIMATED COSTS			TOTAL	BUDGET	ACTUAL	COMMENTS
			UNITS	GOALS	BASE $	CUMUL. BASE $	INCR. $	CUMUL. INCR. $	EST. $	ALLOC.	COSTS	
Fixed Costs (region $):												
Management Planning	40801				10,000							
Right-of-way acquisition	40802	H	NO.		0	0	0		0			
emergency repairs	40803	H	NO.		10,000	0	0		0			
inspection of bridges/major culverts	40804	H	NO.		0	0	0		0			
railway crossing maint.	40805	H	NO.		700	0	0		0			
subtotal						20,700			0			
Surface Maintenance	40805	H	KM	12.5	50,000	0	0	0	0			Lachmach - grade & surfacing
		M	KM	6.5	0	0	10,000	0	0			Green R. - surface repairs
(e.g., grading, brushing, ditch cleanout, bridge deck cleaning and repair)		L	KM		0	0		0	0			
subtotal						50,000		10,000	0			
Modification-Bridge and Major Culvert Replacement	40806	H	NO.		0	0	0	0	0			
		M	NO.		0	0	0	0	0			
		L	NO.		0	0		0	0			
subtotal						0		0				
Modification-Other Works	40807	H	NO.	12.5	50,000	0	0	0	0			Lachmach-install culverts & blast ditchline
		M	NO.	6.5	0	0	20,000	0	0			Green R.-ditch & grade improvements
(e.g., road relocation, stream culvert replacement, road stability repair)		L	NO.		0	0		0	0			
subtotal						50,000		20,000	0			
Road Deactivation	40808	H	KM			0	0	0	0			
		M	KM		0	0		0	0			
		L	KM		0	0		0	0			
subtotal									0			
TOTAL						120,700		30,000				

FOR YEAR 2002/2003 DISTRICT NORTH COAST

ACTIVITY	ACCT	PRIORITY	OUTPUT UNITS	OUTPUT GOALS	BASE $	ESTIMATED COSTS CUMUL. BASE $	INCR. $	CUMUL. INCR. $	TOTAL EST. $	BUDGET ALLOC.	ACTUAL COSTS	COMMENTS
Fixed Costs (region $):												
Management Planning	40801				10,000							
Right-of-way acquisition	40802	H	NO.		0	0	0		0			
emergency repairs	40803	H	NO.			0	0		0			
inspection of bridges/major culverts	40804	H	NO.		0	0	0		0			
railway crossing maint.	40805	H	NO.		700	700	0		0			
subtotal						10,700			0			
Surface Maintenance	40805	H	KM	12.5	50,000	0	0	0	0			Lachmach
		M	KM	6.5	0	0	10,000	0	0			Green River
(e.g., grading, brushing, ditch cleanout, bridge deck cleaning and repair)		L	KM		0	0		0	0			
subtotal						50,000		10,000	0			
Modification-Bridge and Major Culvert Replacement	40806	H	NO.		120,000	0	0	0	0			Green River - 2 bridges
		M	NO.		0	0	0	0	0			
		L	NO.		0	0		0	0			
subtotal						120,000		0				
Modification-Other Works	40807	H	NO.			0	0	0	0			
		M	NO.		0	0		0	0			
(e.g., road relocation, stream culvert replacement, road stability repair)		L	NO.		0	0		0	0			
subtotal									0			
Road Deactivation	40808	H	KM			0	0	0	0			
		M	KM		0	0		0	0			
		L	KM		0	0		0	0			
subtotal									0			
TOTAL						180,700		10,000				

FOR YEAR 2003/2004 DISTRICT NORTH COAST

ACTIVITY	ACCT	PRIORITY	OUTPUT UNITS	OUTPUT GOALS	BASE $	ESTIMATED COSTS CUMUL. BASE $	INCR. $	CUMUL. INCR. $	TOTAL EST. $	BUDGET ALLOC.	ACTUAL COSTS	COMMENTS
Fixed Costs (region $):												
Management Planning	*40801*				10,000							
Right-of-way acquisition	*40802*	H	NO.		0	0	0		0			
emergency repairs	*40803*	H	NO.			0	0		0			
inspection of bridges/major culverts	*40804*	H	NO.		0	0	0		0			
railway crossing maint.	*40805*	H	NO.		700	0	0		0			
subtotal						10,700			0			
Surface Maintenance	*40805*	H	KM	12.5	50,000	0	0	0	0			Lachmack FSR
		M	KM	6.5	0	0	10,000	0	0			Green River FSR
(e.g., grading, brushing, ditch cleanout, bridge deck cleaning and repair)		L	KM		0	0		0	0			
subtotal						50,000		10,000	0			
Modification-Bridge and Major Culvert Replacement	*40806*	H	NO.		0	0	0	0	0			
		M	NO.		0	0	20,000	0	0			
		L	NO.		0	0		0	0			
subtotal								20,000				
Modification-Other Works	*40807*	H	NO.			0	0	0	0			
		M	NO.		0	0		0	0			
(e.g., road relocation, stream culvert replacement, road stability repair)		L	NO.		0	0		0	0			
subtotal									0			
Road Deactivation	*40808*	H	KM			0	0	0	0			
		M	KM		0	0		0	0			
		L	KM		0	0		0	0			
subtotal									0			
TOTAL						60,700		30,000				

8.0 STRENGTHENING SUSTAINABLE FOREST MANAGEMENT (SSFM)

8.1 Regional Source Document

8.1.1 Description of Regional SSFM Context

Sustainable Forest Management is a core mandate of both the MoF and MELP. In addition, FRBC has incorporated SSFM as one of its strategic objectives. In partnership with the Forest Industry, these agencies are attaining stronger sustainable forest management, in part, through RMPs in each Region of the Province.

The SSFM component of the RMP consists of goals, objectives and strategies, as well as prioritized investment opportunities. In order to focus the planning process, a vision for SSFM must be clear.

Initiatives leading us to SSFM have existed for many years. Our strategy is to support these existing initiatives by identifying and investing in knowledge gaps and decision-making tools that currently limit development or progress within those initiatives.

Vision

Consistent with the Canadian Council of Forest Ministers (CCFM) definition of sustainable forest management[2], we will identify the opportunities for investment that support existing or proposed forest resource planning initiatives. The RMP will make recommendations to invest in those projects that will help mitigate the greatest risks to the resources, the people, and communities as determined at the local and regional level.

Goal

The goal of SSFM is to develop strategies which, if implemented, will address the highest priority issues in the implementation of sustainable forest management in the Prince Rupert/Skeena regions over the next five years.

Strategy

District and regional staff considered the following aspects of sustainable forest management to identify priorities and issues:

- CCFM Criteria to achieve sustainable forest management goals:

1. Conservation of biological diversity
2. Maintenance and enhancement of forest ecosystem condition and productivity
3. Conservation of soil and water resources

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[2] "Management to maintain and enhance the long-term health of forest ecosystems, while providing ecological, economic, social and cultural opportunities for the benefit of present and future generations"

4. Forest ecosystems contributions to global carbon cycles
5. Multiple benefits to society
6. Accepting society's responsibility for sustainable development.

- Key issues affecting each district:

1. Certification (Performance-based management systems)
2. Strategic Land Use Plans (LRMP's, LUP's)
3. Innovative Forest Practices Agreements (IFPA's)
4. Timber Supply Reviews (TSR)
5. First Nations Treaty Negotiations
6. First Nations Forestry Strategy (FNFS)
7. Forest Practices Code implementation (e.g. Identified Wildlife Management Strategy; biodiversity guidebook; ungulate winter ranges)

Using the goals associated with CCFM directed us towards the comprehensive list of functions and outputs of a sustained forest ecosystem and management regime. We then made recommendations, in matrix format, derived from issues affecting each districts and the region as a whole.

To develop strategies and action plans to address the priority issues, we adopted the following approach:

- Identify knowledge gaps, decision-making tools, and monitoring and evaluate opportunities that must be filled to address the issues.

- Evaluate the existing knowledge, technical tools, primarily decision-making or explanatory models, for application.

- Recommend the optimum cost effective solution for each gap. This may include:

1. Information dissemination (extension, training, access/exchange)
2. Information collection (new inventories)
3. Knowledge development (pure and/or applied research)
4. Decision making tool development (models, processes)
5. Monitoring or model validation processes (that will inform us whether the issue has or is being addressed).

8.1.2 Sources and Processes Used

Following the process outlined in the FRBC RMP Guidelines, PRFR and the Skeena Environment Region identified members who could avail themselves to the proposed process. Key people in planning from government and industry were invited to participate in bi-weekly meetings to provide input into the SSFM foundation to the regional RMP process.

In June, Phase 1 tasks were divided, as per the Guidelines, between three groups or teams of people. The "Regional Strategic Team" (RST) was identified to provide guidance and direction as to the key regional issues. The "Regional Planning Team" (RPT) coordinated the process within the region, providing background to the "District Planning Teams" (DPT) in each of the respective Forest Districts in the region. An orientation session was held in Terrace and in

Houston as an outreach by FRBC staff to familiarize district personnel with the importance and short time frame for this process.

In July, Phase 2 of the process saw members of the Regional Planning Team using the criteria for sustainable forest management identified by CCFM that has been incorporated into the Canadian Standards Association certification requirements for ecologically sensitive operational practices. The Team identified the key issues in the region, which were confirmed and supplemented by the Regional Strategic Team early in the process.

In August, the District Planning Teams took on Phase 3, identifying and prioritizing those issues that were specific to each district. These were identified in initiatives such as the Timber Supply Review (TSR), Strategic Land Use Planning processes (LRMP's, LUP's), Innovative Forest Practices Agreements (IFPA's), Identified Wildlife Management Strategy (IWMS), Certification and more. Once complete, each DPT issue summary was submitted to the region for roll up and incorporated into this report.

Once identified, the Regional Planning Team then keyed into developing strategies towards resolving the issues surrounding sustainable forest management in the region (8.3).

8.1.3 Status of Strategic Land Use Planning

The following information was made available by the Land Use Coordination Office (http://www.luco.gov.bc.ca/lrmp/lrmpstat.htm)

8.1.3.1 Bulkley LRMP

The Bulkley LRMP was approved in March 1998 and is being implemented. A monitoring committee was established in the spring of 1999. Members held their first meeting on November 1, 1999 to develop the terms of reference and a workplan for future activities. The committee has developed a draft monitoring framework, and will be implementing the monitoring strategy and generating a monitoring report within a year's time.

8.1.3.2 Cassiar Iskut-Stikine LRMP

The planning table of the Cassiar Iskut-Stikine LRMP finalized consensus on a recommended land use plan on May 30, 2000. The proposed plan has been submitted to government for approval.

8.1.3.3 Kalum

The Kalum LRMP Table has worked diligently on problem solving toward the development of a single land use scenario. Following several Working Group meetings, table members reconvened in the fall of 1999 to prepare for and initiate final negotiations.

Final negotiations began in February 2000, and Table members worked collaboratively to reach conditional agreement on recommended protected areas. In March 2000 significant progress was made in discussions around biodiversity and visual resources. The Table is very near completion of an Agreement-In-Principle, targeting completion in October, 2000. The plan will then be made available for public review and ratification.

8.1.3.4 Kispiox

The Prince Rupert Interagency Management Committee (IAMC) initiated an LRMP monitoring committee in the spring of 2000. All past and present members of any planning processes in the district (LRMP, LRUP, Babine, Upper Kispiox, Seven Sisters) received a letter in the mail describing the formation of the monitoring committee. Selection of the members of the monitoring committee happened in April, 2000. Since that time, the committee has been working on developing a monitoring framework to implement in the next year.

8.1.3.5 Lakes

On August 6, 1999, government announced approval-in-principle of the Lakes LRMP. The spirit and intent of the LRMP is being implemented, and further work is being undertaken to assess and manage the beetle infestation in the Entiako Protected Area. A monitoring committee has been selected, and is currently working towards generating a monitoring framework agreement.

8.1.3.6 Queen Charlotte Islands

The process has not yet been fully initiated. A technical background land use report for the plan area has been prepared. Discussions continue between LUCO and the Islands Community Stability Initiative (ICSI) to identify a suitable model for land use planning on the Queen Charlotte Islands.

8.1.3.7 North Coast

A Process Coordinator has been hired to initiate and coordinate the development of an LRMP for the North Coast TSA. Government is undertaking preparatory work, and is targeting initiation of an LRMP process early in 2001.

8.1.3.8 Morice

Licensees and government have initiated an Innovative Forest Practices Agreement (IFPA) for the Morice TSA. Using the MacGregor Model Forest analysis model, best management strategies are being tested and implemented to enhance forest management opportunities in the area.

The Morice is a priority area for an LRMP, and government will initiate a planning process when other processes are completed and resources become available

8.1.3.9 Kalum North (Nass)

A planning process will be initiated when other processes are completed and resources become available.

8.1.3.10 Dease-Liard

A planning process will be initiated when other processes are completed and resources become available.

8.1.3.11 Atlin-Taku

The Atlin-Taku area is considered the next priority area to initiate an LRMP planning process.

8.1.3.12 Landscape Unit Plans

The Bulkley district staff has completed draft Landscape Unit Plans for the planning area of the Bulkley LRMP. The district manager has approved the biodiversity objectives for the areas defined in the LUP's; however, other objectives are draft and used to guide forest management practices in the Bulkley TSA.

The Regional Manager for implementation in PRFR has approved the Regional Land Unit Planning Strategy. The Strategy establishes biodiversity emphasis options and identifies a proposed timetable for biodiversity planning in the Region. Districts are at various stages of analysis and preparatory work to establish landscape objectives.

8.1.3.13 Timber Supply Review

Forest District	Management Unit	TSR 2 Status	TSR 2 Completion Date
Lakes	Lakes TSA	in-progress	June, 2001
Morice	Morice TSA	in-progress	December, 2001
Bulkley-Cassiar	Bulkley TSA	in-progress	June, 2001
	Cassiar TSA	in-progress	April, 2001
Kispiox	Cranberry TSA	complete*	May, 1998
	Kispiox TSA	in-progress	December, 2001
Kalum	Kalum TSA	complete	November, 1999
	Nass TSA	in-progress	August, 2001
	TFL 1	complete	March, 1999
	TFL 41	complete	December, 1999
North Coast	North Coast TSA	complete	October, 2000
	TFL 25	in-progress	December, 2001

8.1.3.14 Traditional Use Study Status in PRFR, Aug. 2000

Completed Projects	Ongoing Projects	Potential Projects
Kaska	Gitxsan	Cheslatta
Allied Tsimshian	Haisla	Lake Babine Nation
Gitanyow	Kitasoo	Hartley Bay
Kitselas/Kitsumkalum	Nedo'ats	Taku River Tlingit
Tahltan	Metlakatla	
Wet'suwet'en		

8.2 Key Regional SSFM Issues

The priority issues identified by the RST, RPT and the DPT's are highlighted in a summary table in this section. Issues are classified as follows:

Global Issues (likely common at the provincial level)

- How can we access existing information and technology transfer to share information resources as broadly as possible at reasonable cost? (i.e. confidentiality issues around cultural resources, technical incompatibilities, information access and dissemination)
- How can we increase the participation of First Nations and forestry communities in the local forest sector economies?
- How do we incorporate consistent monitoring and performance-based management processes as part of every management strategy and process?

Landscape Level Issues **(likely common at the regional level)**

- What is the site productivity in even-aged and uneven-aged managed stands?
- How can we provide the opportunity for consistent Landscape Unit Planning in all of the areas we jointly manage? Areas of inconsistency include:

1. designating constrained areas (i.e. special management considerations),
2. incorporating more integrity behind reserves and net downs to mitigate downward pressures on timber supply,
3. maintaining reserve attributes and mitigating downward pressures on timber supply
4. exploring opportunity for intensive forest management areas within LRMP's and LUP's.

- In completing the stream inventories for the region, how do we provide better prescriptive guidelines for unclassified streams in the existing inventories?
- How do we identify Ungulate Winter Range?
- What are the best management practices for operations on steep slopes with respect to conserving water quality and quantity, slope stability and productive land base?

Stand Level Issues (knowledge and information gaps at the operational/stand level)

- What management opportunities would maintain critical attributes and allow timber harvesting in constrained areas?
- What are the best management practices around S4-S6 streams?

Once the issues were identified, the regional and district planning teams then developed and prioritized strategies toward resolving the issue, thereby determining their investment needs.

The following table includes a summary of the issues identified by the RST and RPT for PRFR. Each district's issue table is included in order to facilitate joint efforts and synergies between districts dealing with similar issues.

SSFM MATRIX OF CCFM GOALS with RELATED REGIONAL and DISTRICT ISSUES

Shaded Issues are those deemed High Priority by the Regional Strategic Team

Underlined Issue Numbers are those deemed High Priority by the Districts. Issues in Bold are existing projects.

Goal	**Regional Management Issues**	**District Issues**						
		Lakes	**Morice**	**Bulkley**	**Kispiox**	**Kalum**	**N. Coast**	**Cassiar**
1.0 Conserve biological diversity	1.11 How do we determine how forest management practices impact on other forest resources?	**La7**	–	–	–	–	NC13	Ca10
	1.12 How can we develop effective monitoring strategies that are measurable, predictable, relevant, understandable, valid and feasible?	La8	–	**Bu7, Bu11**	–	–	NC11	–
	1.21 How do we ensure the LU's retain appropriate attributes represented in riparian, OGMA's, FEN's, sensitive areas	**La5**, La27, La21, La28	Mo1, **Mo2**, **Mo3**, **Mo5**, Mo6, Mo8, Mo14, M016	**Bu3,Bu7, Bu2**	Ki2, Ki4, **Ki6**, Ki10	Ka8, Ka12, **Ka19**	NC2, NC8, NC12, NC18, NC19, NC23	Ca11
	1.22 What timber opportunities are available around managing critical or sensitive habitat?	La19, La27	Mo5,	**Bu3,**	–	–	–	Ca10
	1.23 How can we best manage harvesting and crossing S4-S6 streams to protect and conserve habitat?	La2, La16, La30, La31	**Mo7, Mo12,** Mo17	**Bu4,** Bu5	**Ki5**	**Ka22**	NC4, NC12, **NC16**	–
	1.24 How can we identify, map and manage Ungulate Winter Range (UWR) as required for strategic planning under the FPC?	La24	Mo10	**Bu14,**	–	Ka9, Ka18	NC14	**Ca4**, Ca12
	1.31 What management strategies will retain attributes (i.e. see 1.21) and mitigate downward pressure on timber supply?	**La16**	–	–	–	–	–	–
	1.32 For what forest resources are we lacking a complete and integral inventory to meet TSR requirements?	La2, La9,La10,La11	**Mo7**, Mo10, Mo14, **Mo15,** Mo19	**Bu3,Bu8, Bu9,** Bu16	Ki1, Ki4, Ki7, Ki10	Ka3, Ka4, Ka5, **Ka19, Ka20,** Ka21, Ka24	**NC1,** NC2, NC10, NC12, NC22	**Ca1**, **Ca2**, Ca8, Ca9
	1.33 How can we access existing information and technology transfer to share information resources as broadly as possible at reasonable cost?	**La16**	Mo9, Mo18, Mo22	–	–	**Ka1,** Ka24	–	–

Goal	Regional Management Issues	District Issues						
		Lakes	Morice	Bulkley	Kispiox	Kalum	N. Coast	Cassiar
2.0 **Maintain and enhance ecosystem condition and productivity**	**2.11 What is the productivity of managed stands in the different ecosystems of the PRFR?**	La5, La7	Mo9, **Mo20**	Bu6	Ki12, Ki15	Ka2, Ka6	NC2, **NC3**, NC10, NC18	**Ca1**, **Ca2**
	2.12 How productive are managed stands using partial cutting silvicultural systems in the different ecosystems of the PRFR?	La5, La7	Mo9	Bu6, Bu11, **Bu12**, Bu15	–	Ka2, Ka16	**NC3**	–
	2.13 How do we evaluate and manage the risk and variation of endemic and epidemic insects and disease on forest productivity and management	**La1**	–	Bu10	**Ki8**, **Ki11**, Ki14,	–	–	–
	2.14 How do we integrate pest outbreaks into management strategies for a defined forest area?	**La1**, La4	–	Bu10	–	–	NC17	–
	2.15 What impacts will timber harvesting management decisions have on other forest resources over time?	**La8**	–	–	–	–	–	**Ca4**
	2.16 What is the long-term ecological and economic viability of current forest management practices?	**La8**	–	**Bu9**	–	Ka16	–	–
	2.17 How do we manage for a sustainable rate and pattern of harvesting forest resources over time in the different ecosystems in the PRFR?	–	–	**Bu9**	–	Ka13, Ka15	–	–
	2.18 How do we ensure a sustainable rate and availability of harvest of botanical forest products?	–	–	–	Ki7	Ka13	–	–
	2.19 How do current and proposed forest management practices impact on other forest resources?	La18	–	–	Ki7, Ki13	Ka12, Ka16	–	**Ca4**
	2.110 Should we be managing our resources on a volume-based or area-based rate of harvest?	–	–	–	–	–	–	–
	2.21 How can we conserve viable populations of Identified Wildlife Species, and rare and endangered species (red and blue listed), that inhabit the forested land base?	**La9**, **La10**, **La11**, **La12**	Mo1, **Mo2**, **Mo3**, Mo4, **Mo5**, Mo6, **Mo7**, **Mo8**, Mo10, Mo11, Mo16	Bu2, **Bu14**,Bu15, Bu17	Ki6, Ki10	Ka8, Ka15, Ka17	NC7, NC8, NC13, NC20, NC21, NC23, NC24, NC25	Ca5, Ca6, Ca7
	2.31 How do we manage harvesting around and crossing S4-S6 streams to adequately protect and conserve water quality and habitat?	–	–	–	–	–	–	–

Goal	Regional Management Issues	District Issues						
		Lakes	Morice	Bulkley	Kispiox	Kalum	N. Coast	Cassiar
2.0 Maintain and enhance ecosystem condition and productivity (cont'd)	2.32 What are the best management practices for operations on "constrained" areas (i.e. steep slopes) with respect to conserving water, slope stability and productive land base?	_	_	_	_	**Ka23**	_	_
	2.41 How do we reduce the amount of waste wood resulting from harvesting, handling and milling practices?	_	_	_	_	Ka14	_	_
	2.42 What are ecologically and economically effective and efficient methods to dispose of waste wood from our harvesting and milling processes?	_	_	_	_	_	_	_
3.0 Conserve Soil and Water Resources	**3.11 How do we manage harvesting around and crossing streams to adequately protect and conserve water quality and quantity?**	**La13**, La14, La25	**Mo12, Mo17,** Mo21	**Bu11,**	Ki3	_	NC4, **NC16**	_
	3.12 What are the best management practices for operations on steep slopes with respect to conserving water quality and quantity, slope stability and productive land base?	_	Mo21	**Bu8,Bu11**	Ki3	_	NC26	_
	3.13 What are the best management practices around unclassified streams based on existing stream inventory information?	La30, La31	**Mo7**	**Bu4**	_	_	_	_
	3.14 How are forest management practices affecting landscape level hydrologic regimes?	_	_	**Bu11,**	_	_	_	_
4.0 Conserve forest ecosystem contributions to global carbon cycles	4.11 How do we ensure our forest management practices are not contributing to degradation of global systems?	_	_	_	_	_	_	_

Goal	Regional Management Issues	District Issues						
		Lakes	Morice	Bulkley	Kispiox	Kalum	N. Coast	Cassiar
5.0 Ensure multiple benefits to society	5.11 How do we increase the participation of First Nations in the local forest sector economy?	*La6*	_	**Bu13**			NC27, NC29	
	5.12 How do we continue to provide diverse local employment opportunities?	La21	Mo13	_	_	_	_	_
	5.13 How do we provide opportunities for other resource use in managing timber resources? (i.e. recreation, hunting, trapping and fishing opportunities and visual values)	**La6**, La26, La29	Mo10, Mo11, Mo13	Bu1	Ki9	_	**NC5**, NC28	Ca3, **Ca4**,
	5.21 How do we ensure aboriginal rights and title are conserved in traditional territories?	***La6***	Mo10	Bu1,**Bu13**	_	_	**NC6**, NC27, NC28, NC30	_
	5.22 How do we provide for investment certainty with respect to managing a forest resource land base over time?	La17	_	_	_	_	NC31	_
	5.31 What opportunities are there in reducing the waste wood from our harvesting, handling and milling processes?	_	_	_	_	_	NC32	_
	5.41 How can we best manage access to forest resources to protect and conserve local resource values?	_	Mo13	Bu1	Ki9	Ka10	NC33	_
)	5.42 How do we provide opportunities for other resource use in managing timber resources? (i.e. recreation, hunting, trapping and fishing opportunities)	La18	Mo13	Bu1	Ki7	Ka7	_	_
	5.51 How do we increase the participation of our communities in the local forest sector economy?	_	Mo13	Bu1	_	_	_	_
	5.52 How do we continue to provide diverse local employment opportunities?	_	Mo13	_	_	_	_	_

Goal	Regional Management Issues	District Issues						
		Lakes	Morice	Bulkley	Kispiox	Kalum	N. Coast	Cassiar
6.0 Accept society's responsibility to sustainable development	6.1 How do we provide for recreation, hunting, trapping and fishing opportunities and visual values in managing forest resources?	La22, La26	Mo10,Mo11,Mo 13	–	Ki9	Ka7	**NC5**	**Ca4**
	6.2 How do we determine what the long-term implications of global climate change will have on local forest management practices?	–	–	–	–	–	–	–

LAKES Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies to manage issue	Projects
La1	IFPA?		1	Epidemic outbreaks of Bark Beetles present a risk to biodiversity & other wildlife values, & a reduction of timber values resulting from the death of extensive areas of mature forest types. The salvage of beetle killed timber may result in serious fragmentation of some landscapes. What is the most effective means of undertaking Bark Beetle Risk & Incident Assessments?	2.13, 2.14	TSA policy early detection	TSA	It impacts and/or constrains sustainable forest uses and benefits (including fish, water, and timber) important to society and industry. It will impact the forest managers ability to conserve biological diversity and its associated values.	Improve effective beetle assessment by obtaining specially enhanced satellite imagery for remote sensing of Bark Beetles within the Lakes TSA. Two similar projects are currently underway within the Prince George Region and the success of these projects can be used to determine if this is an acceptable strategy with the Lakes TSA.	
La2	Existing		2	1984 TRIM I bases were created with 1:70,000 imagery. Many S4 to S6 streams are missing.	1.23, 1.32	TSA / Licensees	TSA	Incomplete base mapping for all other interpretive mapping.	complete TRIMII on approx. 70 mapsheets	80% of this work has been completed by PG's Williston Lake project
La3	Existing		3	Inadequate base mapping for management interpretations.		TSA / Licensees	TSA	Increased cost, for a poorer mapping product because missing attributes are collected add-hoc which would be provided by a VRI (ie PEM)	Complete VRI on remaining mapsheets. Methods to be determined jointly by IFPA and MOF.	BFP is has completed approx 30% od the TSA as part of the EFMPP initiative
La4	IFPA?		4	Currently the district only has a MPB management strategy. Other forest pests are present in the district & some are emerging & having a potentially significant economical impact on timber supply	2.14	LRMP	TSA	No coherent plan to address the full range of forest pests within the district with the potential to misdirect management efforts resulting in loss of productive timber	Develop a district wide Forest Health Management Strategy that is inclusive of a broad range of forest pests and diseases.	Framework is being developed by MOF. Some may be addressed through IFPA. Funding may not be required in 2001/02.
La5	New		5	No detailed accurate ecosystem mapping exists to provide a base for wildlife mapping & timber management planning	1.21, 2.11, 2.12	LRMP / EFMPP	TSA	More costly, possibly ad-hoc collection of wildlife attributes/ some timber planning cannot be done	Complete ecomapping in district using PEM or TEM depending on application (eg., Caribou, land-use, ungulate winter range)	Ideally this project will be subject to the VRI. Will not require funding in 2001/02
La6	Existing		6	How do we provide for the complete range of habitat requirements that support First Nations Traditional Uses (i.e. Hunting and Gathering, etc)?	5.11, 5.13, 5.21	Wet'n /Lake Babine/Ulkatcho/Cheslatta/Nat'oot'en/Stellat'en/Yekooche/	TSA	Will provide for the complete range of Habitat indicators & targets which can be utilized by planners as inputs into spatial models & LU Plans.	Provide continuous update the existing Lakes Archeaological Resource Plan (LARP). Incorporate VRI TRIM II and PEM as they become available.	
La7	IFPA		7	Inability to identify if current management practices will achieve future target forest conditions as described in Landscape Unit Plans.	1.11, 2.11, 2.12	LUP / LRMP / IFPA	TSA	Need the ability to model and project future stand conditions as impacted by current management practices in order to properly assess and value investment opportunities and future yields/supply.	Complete TSA & Landscape Unit level spatial modeling to assess spatial impacts (on all forest values) of current practices & policies. This activity provides a direct link to level 2 & 3 silviculture analysis being completed throughout the Province. (Work is as part of IFPA)	To be funded through IFPA

LAKES Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies to manage issue	Projects
La8	IFPA		8	What are the spatial implications on the landscape of current policies & practices? How do we measure & monitor 'environmental wellness'?	1.12, 2.15, 2.16	LRMP, LUP	TSA	Need the ability to model impact of current policies and practice on critical forest resources, and to support measurement and monitoring of key indicators.	Complete TSA and Landscape Unit level spatial modeling to assess spatial impacts of current practices and policies. This activity provides a direct link to the TSA Pilot initiative, the adaptive forest management strategy and performance monitoring. (This work is being undertaken as part of IFPA).	To be Funded through IFPA
La9	Existing		9	Insufficient data base exists on caribou habitat.	1.32, 2.21				Caribou-lichen study.	$60,000 in 2001/02
La10	Existing		10	Insufficient data base exists on caribou habitat.	1.32, 2.21				Existing caribou/moose radiocollaring study.	$60,000 in 2001/02
La11	Existing		11	Lack of information on Identified Wildlife Species exists.	1.32, 2.21				Continue existing Mountain Goat monitoring with Morice Forest District.	$40,000 in 2001/02
La12	Existing		12	Lack of information on Identified Wildlife Species exists.	2.21				Continue existing Northern Goshawk project with Morice Forest Distict. 3 years completed; monitoring 28 nests.	$70,000 in 2001/02
La13	Existing		13		3.11				Continue funding hydrometric stations for Dave Wilford and Dave Maloney at MOF on Twain Creek and North Beach Creek.	$30,000 in 2001/02 and same for 2002/03
La14	New		14	No baseline data for water quality exists.	3.11			Important issue for LRMP and SFM certification but no framework or baseline information to use for monitoring.	Adopt Ian Sharpe's water quality monitoring projects.	To be funded through IFPA
La15	Existing		15						Complete 1:20,000 Fish and Fish Habitat Inventory on remaining watersheds in district.	$200,000 for 2001/02
La16	New		16	Fish stream inventories are completed to different standards in IGDS & ARC formats that are not compatible with the custodians, MELP format.	1.23, 1.31, 1.33	SBFEP / Licensees	TSA	Fish stream & Lake inventory data collected to date is not available provincially or readily available at the district level.	Reformat the Lakes fish stream inventories in ARC format to MELP standards.	To be funded through IFPA
La17	New		17	Inadequate protection for long term forestry investment through establishment of adequate FLR.	5.22	LRMP	TSA	Limited amount of FLR and increased risk to long term forestry investments.	Inventory land capability (for agric. and forestry) and key biodiversity and wildlife habitat values in order to refine the Forest Land Reserve within and outside the agriculture settlement zone	
La18	New		18	Loss of grasslands through encroachment.	2.19, 5.42	LRMP	TSA	Loss of AUMs during the critical spring grazing period.	Restore fire maintained grassland ecosystems to maintain grazing opportunities for livestock.	
La19	?		19	1987 TSA is outdated & incomplete for long term timber production investment decisions.	1.22	LRMP	TSA	No coherent guidance for long term timber investment decisions (IFPA obligation).	Develop a Timber Mngt Strategy to guide long term timber production decisions, consistent with LRMP	
La20	Existing		20	Attempt to reduce harvesting practices that appear to be focusing on higher volume lower cost stands.		LRMP	TSA	Not adequately addressing lower volume classes, less desirable species and avoiding special management areas due to higher cost operating will impact future timber supplies (by leaving lower quality and higher cost stands for the future - this could reduce timber supply and stumpage revenue).	Develop a means to plan timber harvest and monitor actual harvest in order to verify that timber contributing to the AAC it is being harvested in proportion to its contribution to the AAC (volume, species and management zone).	

LAKES Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies to manage issue	Projects
La21	New		21	LRMP deciduous management strategies need to be implemented. Potential for utilizing deciduous species should be explored (Direction of Chief Forester in TSR 1).	1.21, 5.12	TSR, LRMP	TSA	Potential for some harvesting & management of populus species which could increase the AAC. Without a more detailed deciduous management strategy LRMP intent regarding deciduous species may not be achieved.	Develop and implement a deciduous management strategy.	
La22	New		22	Meeting public expectations of LRMP implementation around recreation values.	6.1	LRMP	TSA	Not meeting public expectations around managing these special management areas	Develop inventories and management plans for Backcountry Lakes and Recreation Emphasis areas.	
La23	New		23	Need to address factors affecting caribou population success.		LRMP	CMC	A very sensitive LRMP issue - research into this issue will elevate gov't credibility with environmental stakeholders.	Within the Caribou Migration Corridor, address factors affecting caribou pop. success focusing on providing & maintaining quality caribou habitat and movement opportunities--enable caribou migration during fall & provide winter range (LRMP strat. 2.4 & 2.5 chap 4 CMC).	
La24	?		24	Need to upgrade ungulate winter range mapping.	1.24	LRMP	TSA	Potential for increasing or decreasing timber supply (current knowledge about extent of habitats may be inaccurate)	Improve inventories of ungulate winter habitats with ecosystem mapping.	
La25	New		25	Need a means for establishing & monitoring water quality objectives in line with LRMP direction.	3.11	LRMP	TSA	Need to monitor the effects of development activities on water quality within important watersheds to avoid water quality degradation.	Need to establish measureable water quality objectives in order to measure impacts of development on water quality (LRMP chap. 3 strategy 53.4).	
La26	New		26	Lake Classification-how do we manage lake & lakeshore resources sustainability?	5.13, 6.1	LRMP	TSA	To establish the current lakeshore inventory & complete a mngt plan for future lakeshore devel.	Undertake a lake classification using regional guidebook.	
La27	New		27	Lack of adequate information on critical wildlife movement corridors & supporting habitat requirements to support wise stewardship decisions.	1.21, 1.22	LRMP, Lakes First Nations / MELP / MoF / Licensees	TSA	Critical wildlife movement corridors and habitat may be lost if not properly identified and managed. Specific concern for caribou , goat, grizzly & other species at risk.	Develop and maintain (the integrity and function of) a network of corridors linking critical habitats between and within landscape units - develop detailed FENS to facilitate refinement of intensive timber management areas.	
La28	New		28	Inability to identify whether or not the current ecosystem network placement maximizes the needs of the habitat & biodiversity requirements they were designed to provide for.	1.21	LRMP, TSR	TSA	It impacts and/or constrains sustainable forest uses and benefits (including fish, water, and timber) important to society and industry. It will impact the forest managers ability to conserve biological diversity and its associated values.	Develop TEM giving high priority to areas of high ecological value.	
La29	Existing through TSR		29	What is the impact of scenic areas & visually significant areas on TSA & harvesting landbase?	5.13	SBFEP	SBFEP	Potential AAC reduction (This has been shown not to be the case - GH).	Upgrade existing scenic area inventory.	
La30	New		30	1.23 How do we manage around S4-S6 streams to protect and conserve habitat?	1.23, 3.13	Wet'n	TSA	Broad filters may not provide for or protect smaller but critical habitat types associated with these stream classifications.	Develop strategies that provide for the id., mngt & conservation of critical habitat components associated with streams.	
La31	Existing		31	Uncertainties related to stream riparian classification & possible over & under estimates of the inoperable landbase exist.	1.23, 3.13	LRMP, TSR	TSA	It impacts &/or constrains sustainable forest uses and benefits (including fish, water, and timber) important to society and industry. It will impact the forest managers ability to conserve biological diversity & its associated values.	Inventory fish hab. & pops. Complete a 1:20K 2nd sample fish & fish hab. inv. to confirm fish presence or absence thereby confirming riparian classifications. On mapsheets where 2nd samples are completed existing inv. will be brought up to new RIC mapping standards bringing the outputs of this process in line with current digital requirements for TSR & Forest Estate Modeling.	

MORICE Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies to manage issue	Projects
Mo1	New	DMELP	H1b	Mtn. Goat - is a multi year fine filter species. The issue is based on the sustainable management of goats and goat habitat in the Morice. Where is the goat habitat, what is the degree of use of the habitat, and what kinds of population size can it support?	2.21, 1.21	SFMP, LRMP, LU TSR, IWMS, Certification	Morice	There is a need to identify goat habitat throughout the Morice as an initial step to ensure and/or restore sustainable goat populations. This information would be utilized by planners re: the, IWMS, LRMP, TSR and SFMP.	Identify and map out potential goat habitat throughout the Morice TSA. Compare with known habitat locations. Field truthing of selected areas and GPS important features (i.e. trails). This project will link to the management strategies and predictive tools currently being developed and will feed into the data necessary to development sustainable management of goat populations.	–
Mo2	Existing multi-year project	DMELP, HFP, Canfor	H1a	Mtn. Goat - is a multi year fine filter species. The issue is based on the sustainable management of goats and goat habitat in the Morice. Where is the goat habitat, what is the degree of use of the habitat, and what kinds of population size can it support?	2.21, 1.21	SFMP, LRMP, LU TSR, IWMS, Certification	Morice	There is a need to develop management strategies that ensure and/or restore goat populations. This information would be utilized by planners re: the, IWMS, LRMP, TSR and SFMP.	Continue funding existing field data collection on harvested areas, to develop management strategies and predictive tools to ensure sustainable management of populations.	–
Mo3	Existing multi-year project	DMELP, HFP	H5	Goshawk - is a multi year fine filter species. The issues is based on the sustainable management of Goshawk re: where is the habitat, to what degree is the habitat being utilized, what kind of sustainable population can be supported?	2.21, 1.21	SFMP, LRMP, LU TSR, IWMS, Certification	Kispiox, Morice and Lakes	There is a need to develop management strategies to ensure and/or restore Goshawk populations. This information would be utilized by the IWMS to apply and then test IWMS strategies to be able to manage Goshawks and help in identifying WHA's for Goshawk. This information would also be useful for TSR, LRMP and SFMP.	Continue funding collection of existing field data collection to develop management strategies and predictive tools to ensure sustainable management of populations.	–
Mo4	New	DMELP, Canfor	H2	Bull Trout - is a multi year fine filter species. The issue is based on the sustainable management of Bull Trout, BT habitat and the kind of sustainable population that can be supported.	2.21	SFMP, LRMP, LU TSR, IWMS, Certification	Morice	There is a need to develop management strategies to ensure and/or restore Bull Trout populations. This information would be utilized by planners re: the, IWMS, LRMP, TSR and SFMP.	Identify and map out potential habitat throughout the Morice TSA. Compare with known habitat locations. This project is a first step to identify and quantify suitable habitat that can support sustainable Bull Trout populations.	–
Mo5	Existing multi-year project	DMELP, Canfor, HFP, DMoF	H3	Caribou - is a multi year fine filter species. The issue is based on the sustainable management of Caribou, Caribou habitat and the kind of sustainable populations that can be supported. There are 3 herds that occur in the Morice.	2.21, 1.21, 1.22	SFMP, LRMP, LU TSR, Certification	Morice	There is a need to develop management strategies to ensure and/or restore 3 caribou populations (Telkwa, Mt. Sidney and Tweedsmuir). This information would be utilized by the Telkwa Caribou Herd Recovery Program to apply and then test management strategies to be able to manage Caribou. This information would also be useful for LU's, TSR, LRMP and SFMP.	Continue funding existing field data collection to develop management strategies and predictive tools to ensure sustainable management of populations. This project will tie into existing telemetry data and the Caribou modelling project in the Lakes to identify potential habitat and ensure sustainable management of populations.	–

MORICE Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies to manage issue	Projects
Mo6	New	DMELP,	H8	Grizzly Bear- is a multi year fine filter species. The issue is based on the sustainable management of Grizzly Bears re: G Bear habitat and the kind of sustainable populations that can be supported. PEM will identify potential habitat.	2.21, 1.21	SFMP, LRMP, LU TSR, IWMS, Certification	Morice	There is a need to develop management strategies to ensure and/or restore Grizzly Bear populations. This information would be utilized in the Grizzly Bear management Strategy, helping in identifying Grizzly Bear Management Unit's. This information would also be useful for LU's, TSR, LRMP and SFMP.	This project links closely to PEM. GB mapping will use some of the PEM mapping derivatives that will link to Species Accounts. Compare to known GB habitat location. This project is a first step for further studies in order to assess degree of use, quality and quantity of habitat and the potential to ensure sustainable management of populations.	_
Mo7	Existing multi-year project	Canfor, HFP, DMELP	H4	Fish Habitat Inventory is a multi year program that is coming to a close in the next year of two. There is an issue regarding how Category 2 data is used to adjust to local area agreements, data consistency and access to data. There is also an issue concerning the gap in data regarding large lake inventories for Char re: populations, distribution, and location).	1.23, 1.32, 3.13	SFMP, LRMP, LU TSR, Certification	Morice	There is a need to develop an inventory data collection for Lake Char and to complete the collection of fish habitat information. Upon completion of field information 2 more steps are needed before management strategies are developed. One the information data needs to be organised and standardized before it can be easily accessed and used in its entirety and secondly, Lake Char data collection is needed prior to the completion of the collection of fish habitat information. The completion of this information would allow development of management strategies. This information would be utilized by LU's, TSR, LRMP and SFMP.	Continue funding existing field data collection, look into organizing and standardizing the information database. Initiate Lake Char data collection.	_
Mo8	Existing project	RMoF, DMELP, DMoF, Canfor, HFP	H7	PEM - there is a need to identify rare, blue and red listed plant and animal communities in the Morice TSA	2.21, 1.21	SFMP, LRMP, LU TSR, IWMS, Certification	Morice	There is a need to ensure that the EcoWild portion of PEM is undertaken (i.e. wildlife habitat suitability and capability layers based on PEM). This requires that PEM mapping is complete for the Morice. EcoWild may need ground truthing to ensure that we have correctly identified rare red and blue listed plants and animals for LU's, TSR, IWMS, SFMP , LRMP and certification	Provide continued funding for PEM (if not completed by end of fiscal 2000), and EcoWild interpretations on PEM.	_
Mo9	New	DMoF	H6	Growth and Yield - is an issue of forest cover data integrity and consistency for PSP's re-measurement and new plot establishment. There is also an issue of technology transfer from the MOF to licensees	2.11, 1.33	SFMP, LRMP, LU TSR, IWMS, Certification	Morice	There is a need to ensure that important G & Y information is provided to interested groups, in a timely fashion, to incorporate into various analyses and decision making models (silviculture investments, SFMP, certification, TSR)	A group of district, licensee and regional staff be set up to review applicable projects on an annual basis.	_

MORICE Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies to manage issue	Projects
Mo10	New	RMELP, DMELP	M2	Ungulate Winter Range - issue is based on the sustainable management of ungulates, the location of ungulate habitat and the kind of populations that can be supported sustainably. There are economic issues at stake for First Nations, Guides and hunters	1.24, 5.13, 5.21	SFMP, LRMP, LU TSR, IWMS, Certification	Morice	There is a need to develop management strategies to ensure and/or restore ungulate habitat and how to manage. This information would also be useful for LU's, TSR, LRMP and SFMP.	Fund the linkage of PEM mapping products with species accounts to map potential winter range for selected species. Compare with expert knowledge of winter range. This project is the initial step to mapping and identifying critical habitat. Further studies are needed to develop management strategies to ensure/restore sustainable ungulate winter range.	–
Mo11	New	DMELP, RMELP	M3	Marten is identified as an indicator species. The issue is the sustainable management of Marten, the location of the habitat, the use of the habitat, what kinds of populations can be managed sustainably. There are economic issues around the management of Marten for First Nations and Trappers.	2.21	SFMP, LRMP, LU TSR, IWMS, Certification	Morice	There is a need to develop management guidelines for the sustainable management of Marten and Marten habitat that require habitat supply analyses and the factoring of economic concerns by stakeholders.	Fund the linkage of PEM mapping products to identify potential habitat for district. Compare with expert knowledge of habitat range and existing TEM capability/suitability mapping in selected areas in and adjacent to Morice District. Apply existing and expert knowledge to develop management strategies to ensure/restore sustainable management of marten habitat.	–
Mo12	Existing multi-year project	RMELP, DMELP,	M4	Temperature Sensitive Streams - the issue is where are these streams located and what defines temperature sensitivity. There is a gap in knowledge in terms of identification of these streams and how to manage.	1.23, 3.11	SFMP, LRMP, LU TSR, IWMS, Certification	Morice	There is a need to close the knowledge gap with respect to the location and management of temperature sensitive streams and their management. This information needs to be coordinated and co-related with other streams systems in the district.	Continue funding field data collection and development of management of temperature sensitive streams. Look into the management guidelines to see how they can fit or be adapted to the management of stream systems in the district.	–
Mo13	New	DMoF	M5	Recreation - issue is to identify an overall strategic plan to govern how recreation opportunities are identified and managed in the Morice District.	5.13, 5.41, 5.42, 5.51, 5.52	SFMP, LRMP, LU TSR, IWMS, Certification	Morice	There is a need to develop strategic guidelines for the sustainable management of recreation resources and opportunities in the Morice Distirct.	Provide funding for the development of a district wide strategic level plan to manage recreation opportunities and features in the district.	–
Mo14	New	DMELP, RMELP	M6	Lake Classification - issue is how to manage lakeshore resources sustainably.	1.21	SFMP, LRMP, LU TSR, IWMS, Certification	Morice	There is a need to close the knowledge gap with respect to the location and management of the forest resources associated with Lakes in the Morice.	Set up a district specific (district, licensee and regional staff) committee to help with the classification and management of lakeshores	–
Mo15	New	DMoF	M1	Orthophotos - the issue is to acquire for improvement in delineation of forest cover, non-timber resources, permanent access structures.	1.32	SFMP, LRMP, LU TSR, IWMS, Certification	Morice	There is a need to improve the quality and quantity of inventory information in the Morice through funding to produce digital photos. The more accurate information would feed into TSR, LRMP, SFMP's and PEM.	Fund the development of orthophotos. The orthophotos can be used for the IFPA, LU planning, Veg inventory, WO-LU field discussions.	–

MORICE Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies to manage issue	Projects
Mo16	New	DMELP,	L3	Fisher - is a multi year fine filter species. The issue is based on the sustainable management of Fisher, Fisher habitat and the kind of population that can be supported sustainably.	2.21, 1.21	SFMP, LRMP, LU TSR, IWMS, Certification	Morice	There is a need to develop management strategies to ensure and/or restore Fisher, a blue-listed species, populations. This information would be utilized by the IWMS to apply and then test IWMS strategies to be able to manage Fisher and help in identifying Wildlife Management Unit's. This information would also be useful for LU's, TSR, LRMP and SFMP.	Fund the linkage of PEM mapping products to identify potential habitat for district. Compare with expert knowledge of habitat range and existing TEM capability/suitability mapping. Apply existing and expert knowledge to develop management strategies to ensure/restore sustainable management of Fisher habitat.	–
Mo17	New	DMELP, DMoF, Canfor, HFP	L2	Stream Habitat - the issue is to quantify harvesting techniques around sustainable stream habitat	1.23, 3.11	SFMP, LRMP, LU TSR, IWMS, Certification	Morice	There is a need to develop management guidelines for the sustainable management of stream habitat in the Morice District.	Fund the development of sustainable stream management guidelines and link to development of Temperature sensitive streams management guidelines.	–
Mo18	New	DMoF, DMELP	L1	One data model - the issue is to manage the forest inventory in a consistent manner. The potential for data to become corrupt, inaccurate or use of an incorrect version is higher when agencies, licensee's and FN's use different data systems and data exchange is cumbersome.	1.33	SFMP, LRMP, LU TSR, IWMS, Certification	Morice	There is a need to establish common data standards and data management systems between licensees, FNs, the public and agencies to streamline and make simpler the use of inventory information between users.	Establish a district committee with the NWDSC to discuss the model and necessary requirements and gaps. Prepare a project plan and fund in preparation for LRMP.	–
Mo19	New	DMoF	L6	Vegetation Inventory - the issue is to aquire better forest resource information.	1.32	SFMP, LRMP, LU TSR, IWMS, Certification	Morice	There is a need to update 33 mapsheets in the Morice District which currently are based on the 1973 inventory. This information would feed into TSR, LRMP, SFMP and LU planning.	Fund the forest cover update contract for the 33 mapsheets prior to LRMP.	–
Mo20	Existing	DMoF	L5	Site Productivity - the issue is to identify and quantify the regeneration implications due to different stock types and planting techniques.	2.11	SFMP, LRMP, LU TSR, IWMS, Certification	Morice	There is a need to understand and quantify the regeneration impacts to wildlife habitat, use and growth & yield based on stock, density, height, brush types, technique. This impacts TSR, LRMP, SFMP.	Fund existing initiatives assessing impacts to wildlife and timber. The results would be incorporated into TSR, LRMP and the SFMP.	–
Mo21	New	RMoF, DMoF	L4	Alluvial and Colluvial FANS - There is an knowledge gap regarding the management of alluvial/colluvial fans and harvest activities.	3.11, 3.12	LRMP, TSR, IFPA	Morice, Bulkley, Kalum, Lakes, Kispiox	There is a knowledge gap regarding an understanding of Fans and their watersheds and their management.	Ensure funding continues into Regional field data collection and the development of management guidelines for Fans.	–
Mo22	New	DMoF	L7	Technology transfer from research, trials and completed projects to the hands of licensees, agencies, First Nations and the public (I.e. A Web page providing information on various projects in the Morice)	1.33	LRMP, TSR, IFPA	Morice, Region	Unhindered information flow is critical to achieving consensus on management issues, on informing the public as to progress in sustainability, and making decisions with the best available information.	Build web page re: forest management activities in the Morice FD, and link this with regional webpages.	–

BULKLEY TSA

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies	Projects
Bu4	Existing	PIR-	1	There may potentially be unnecessary constraints in timber access and supply due to the uncertainties related to stream riparian classification and possible over estimates of the inoperable landbase.	1.23, 3.13	LRMP, TSR	TSA	It Impacts and/or constrains sustainable forest uses and benefits (including fish, water, and timber) important to society and industry. It will impact the forest manager's ability to conserve biological diversity and its associated values.	Complete 1:20K second sample fish and fish habitat inventories to confirm fish presence or absence thereby confirming riparian classifications. On mapsheets where second samples are completed existing inventories will be brought up to new RIC mapping standards bringing the outputs of this process in line with current digital requirements for TSR and Forest Estate Modeling.	Bu4 - A, Bu4 - B
Bu14	Existing	DMELP-	2	The Telkwa Caribou Recovery Project has been initiated to attempt the re-introduction of a viable Caribou population. How do we acquire additional knowledge of habitat selection by Caribou, and factors limiting population growth?	2.21, 1.22	LRMP, LUP	Bulkley / Morice	Without proper monitoring of Caribou movement , their habitat preferences, responses to natural pressures and disturbances, it will be difficult to establish an effective management regime to maintain herd viability / survival.	Radio telemetry of Caribou and predators to determine key seasonal Caribou habitats, responses of Caribou to predator movements, and demographic parameters.	Bu14 - A
Bu8	Existing	PIR- DMoF-	3	Environmentally Sensitive Area mapping is not adequate to address slope stability issues.	3.12, 2.32	TSR	TSA	Current ESA measures may lead to over estimations of the Inoperable landbase which will adversely impact /constrain sustainable forest uses and benefits. This may provide a positive upward pressure for future TSR's.	Complete Level 'C' terrain stability mapping on contiguous units 15,000 ha or greater on areas with at least 15% of the area having a high potential for landslide or erosion potential. By completing this activity future TSR and forest estate modeling will be able to utilize terrain class 4-5 types for fibre flow netdowns instead of ES Forest Cover types.	Bu8 - A
Bu3	Existing	PIR- DMoF- Wet'n-	4	Not presently able to spatially map the ecosystem network in support of strategic or operational processes. Inability to identify whether or not the current ecosystem network placement maximizes the needs of the habitat and biodiversity requirements they were designed to provide for.	1.21, 1.22, 2.21	LRMP, TSR	TSA	It Impacts and/or constrains sustainable forest uses and benefits (including fish, water, and timber) important to society and industry. It will impact the forest manager's ability to conserve biological diversity and its associated values.	PEM, Conduct and/or ground proof existing Predictive Ecosystem Mapping in the Bulkley TSA, Spatial Modeling.	Bu3 - A
Bu11	Existing	DMoF- PIR-	5	How do we carry out Water Quality Monitoring to meet objectives established for Special Management Zone 2 areas within the TSA? How do we identify whether or not current management practices will achieve target water quality objectives as described in the Landscape Unit Plans? What is an unacceptable range of water quality and can changes in water quality be linked to forest management practices?	3.11, 3.12, 1.12	LRMP, LUP	TSA	Conservation of Water Resources (including water quality) is one of the CCFM Criteria for demonstrating Sustainable Forest Management. Effective monitoring tools are required. It Impacts and/or constrains sustainable forest uses and benefits (including fish, water, and timber) important to society and industry. It will impact the forest manager's ability to conserve biological diversity and its associated values.	IBI may be the best tool to monitor water quality in the Bulkley TSA. Baseline measurements and Model calibration would be required. Design a monitoring of water quality project on a few high priority creeks (e.g. Reiseter, Chicken, Jonas, Boucher, and Nichyeskwa Creeks).	Bu11 - A

BULKLEY TSA **ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT**

Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies	Projects
Bu5	New	Wet'n-	6	How do we manage around S4-S6 streams to protect and conserve habitat?	1.23, 3.11	LRMP, TSR	TSA	Broad filters may not provide for or protect smaller but critical habitat types associated with these stream classifications.	Develop strategies that provide for the identification, management and conservation of critical habitat components associated with streams.	–
Bu9	Existing	PIR-DMoF-	7	How do we consistently identify the upper ecologically operable boundary across the TSA, as it relates to various methods of determining operability for TSRs and Total Chance Planning?	1.32, 2.32	TSR	TSA	The upper ecologically operable boundary within the TSA has a significant affect on the total area of the Operable landbase and associated estimates. It Impacts and/or constrains sustainable forest uses and benefits (including fish, water, and timber) important to society and industry. It will impact the forest managers ability to conserve biological diversity and its associated values.	Complete an operational research study on the ecological upper operability line within the Bulkley TSA. Side benefits of this activity includes work that can be linked with ground truthing PEM already completed in Telkwa Chart, and work that can contribute to the development of a field reference manual for foresters working at upper elevations within the TSA.	–
Bu7	Existing	PIR-DMoF-	8	Inability to identify if current management practices will achieve future target forest conditions as described in Landscape Unit Plans. What are the spatial implications on the landscape of current policies and practices? How do we measure and monitor 'environmental wellness'? What is the long term impact of seral stage distribution and patch size distribution on Timber Supply and Wildlife Habitat Supply?	1.12, 1.21	LRMP, LUP	TSA	Need the ability to model and project future stand conditions as impacted by current management practices in order to properly assess and value investment opportunities, future resource yields (timber / wildlife / water / habitat) and supply trends, and to support measurement and monitoring of key indicators.	Complete TSA and Landscape Unit level spatial modeling to assess spatial impacts of current practices and policies on seral stage and patch size distribution over time to determine Resource (Timber / Wildlife / Water) Yields and Habitat Supply trends. This activity provides a direct link to level two and three silviculture analysis being completed throughout the Province, and to the TSA Pilot initiative, the Adaptive Forest Management Strategy and performance monitoring.	–
Bu13	Existing	DMoF-	9	How to identify and improve knowledge of First Nations features which require further archaeological study?	5.21		TSA	Knowledge of features important to First Nations and their location will provide opportunity for more intensive assessments, management and/or conservation.	Continue existing AOA initiative which requires ground proofing of information provided by the First Nations.	–
Bu17	New	DMELP-	10	How do we monitor the population status of Grizzly Bears in the Babine watershed?	2.21, 1.12	LRMP, Babine LRUP	Babine Watershed	LRMP mandates monitoring of Grizzly Bear population status. If bear population decreases substantially then the LRMP will have been poorly implemented, and biodiversity values lost.	Employ various sign indices (e.g., Hatler's original monitoring of this area) along, potentially, with hair collection for DNA analysis to track individuals.	Bu17- A

BULKLEY TSA

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies	Projects
Bu10	New	PIR-	11	Epidemic outbreaks of Bark Beetles present a risk to biodiversity and other wildlife values, as well as a reduction of timber values resulting from the death of extensive areas of mature forest types. The salvage of beetle killed timber may result in serious fragmentation of some landscapes. What is the most effective means of undertaking Bark Beetle Risk and Incident Assessments?	2.13, 2.14	LRMP, LUP, TSR	TSA	It Impacts and/or constrains sustainable forest uses and benefits (including fish, water, and timber) important to society and industry. It will impact the forest managers ability to conserve biological diversity and its associated values.	Obtain specially enhanced satellite imagery for remote sensing of Bark Beetles within the Bulkley TSA. Two similar projects are currently underway within the Prince George Region and the success of these projects can be used to determine if this is an acceptable strategy with the Bulkley TSA.	–
Bu2	New	Wet'n-	12	How do we ensure critical wildlife movement corridors and supporting habitat requirements are identified and maintained?	1.21	Wet'n / LRMP	TSA	Critical wildlife movement corridors and habitat may be lost if not properly identified and managed.	Develop and maintain a spatial record based on knowledge and direct observation.	–
Bu6	New	PIR- DMoF-	13	How do we improve/refine our Site Productivity estimates? Inability of TSR to utilize ecologically based site indices. Uncertainty around the accuracy of existing SIBEC estimates on a localized TSA level.	2.11	LRMP, TSR	TSA	Need to develop a higher degree of certainty around localized growth and yield estimates used in TSR and strategic planning. Issue effects estimates of the productive operable forest landbase and value of associated forest resources.	Gather additional SIBEC data where increased representation across TSA is required to supplement existing data. Conduct a correlation of SIBEC to PEM exercise an produce an eco-yield analysis using spatial-modeling. Develop a localized SIBEC correlation using existing data (e.g. growth intercept sampling)	Bu6 - A
Bu15	New	DMELP-	14	How do we test the efficacy of alternative silviculture prescriptions in key forested Caribou habitat?	1.22	LRMP, LUP	Bulkley / Morice	There is a need to determine if silviculture prescriptions developed to maintain important caribou habitat values are effective (as supported by measures of lichen growth and caribou use) .	Design a project (probably Research) to monitor Caribou habitat attributes (notably lichen, and alternative prey abundance), and Caribou use, in cutblocks, with experimental cutting prescriptions and control areas.	Bu15 - A
Bu12	Existing	PIR-	15	What is the impact of alternative silviculture systems on Growth and Yield (future supply estimates)? How to assess the rate of release of high elevation leave tree species (e.g. balsam) ?	2.11, 2.12, 1.22		TSA	There is a need to be able to accurately model or predict future yields based on the application of alternative harvest systems. There is a need to maintain currently established Growth and Yield installations throughout the Bulkley TSA to determine if current practices will achieve management objectives and targets.	Design Yield model for different silviculture systems. Help fill the existing Knowledge Gap by completing the re-measurement and interim report for the Blunt Creek Balsam Release Trial established in 1996.	–
Bu1	New	Wet'n-	16	How do we provide for the complete range of habitat requirements that support First Nations Traditional Uses (i.e. Hunting and Gathering, etc.)?	5.21, 5.13	Wet'n / LRMP	TSA	Will provide for the complete range of Habitat indicators amd targets which can be utilized by planners as inputs into spatial models and LU Plans.	Spatial Modeling, PEM, and Habitat Supply Interpretations.	–

BULKLEY TSA

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies	Projects
Bu16	New	DMoF-	17	When will the Bulkley timber inventory be retro-fitted to the VRI standard? An Inventory Statistical Audit has identified a significant statistical difference between ground and inventory measured attributes. How can the statistical rigour of the current Timber Inventory be improved?	1.32	TSR	TSA	Retro-fit of the existing inventory to the new VRI standard will depend on obtaining digital imagery to support Softcopy Technology and additional Phase II sampling to improve the rigour of the inventory estimates derived during Phase I.	Obtain 1::30 000 aerial photography and digital products. There may be a need to undertake additional Phase II ground sampling to improve the statistical rigour of the present inventory,.	–

CASSIAR TSA

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies	Projects
Ca1	YES	**DMoF** **DMELP** FN-	1	How to update a poor inventory (audited) which is a critical base component of most forest and wildlife interpretations?	1.32, 2.11	LRMP, TSR	Dease / Liard	Old inventory (attributes) have resulted in an over-estimation of mature volumes in the Dease - Liard by 30%, large polygon delineation, and poor model calibration. Huge uncertainties in making land use and AAC decisions. No licencees in Cassiar to absorb funding pressure. The scope of re-inventory is far too large to be done in tiny steps.	VRI Phase 1 retrofit of existing inventory to address overestimates of height. TRIM 2 imagery acquisition at 1:30 000 including scanning and digital models. Project began in 1999.	Ca1-A
Ca4	YES	**DMoF** **DMELP** FN-	2	Forestry planning for timber harvesting with the Kaska First Nation. There exists several years of preharvest baseline data but it necessary to continue the studies . It is likely that a short term license will come from the planning and continued monitoring of caribou and moose will be required to ensure planning objectives and strategies are met. As well the province has agreed to and commenced caribou management planning with the Yukon, Federal, and Kaska governments that will require monitoring.	1.32, 1.24, 2.15, 2.19, 5.13, 6.x1	TSR, Dease Liard Area Assessment, Inter-jurisdiction caribou management plan	TSA, Region, Prov, Yukon, and Canada	Will continue to provide baseline information (pre and post harvesting) for TSR information, monitoring objectives and strategies that come from the Dease Liard Area Assessment, and monitoring for the inter-jurisdiction management planning for caribou (Yukon, Federal, BC, and Kaska governments)	Radiotelemetry of caribou and moose to determine movements, critical habitats and mechanics of habitat selection. Habitat selection analysis and caribou & moose stand level habitat mapping for operational planning.	Ca4-A
Ca2	YES	**DMoF** **DMELP** FN-	3	How to update a poor inventory (audited) which is a critical base component of most forest and wildlife interpretations?	1.32, 2.11	LRMP, TSR	Iskut / Stikine	Old inventory (attributes) have resulted in an over-estimation of mature volumes in the Iskut-Stikine by 12%, large polygon delineation, and poor model calibration. Huge uncertainties in making land use and AAC decisions. No licencees in Cassiar to absorb funding pressure. The scope of re-inventory is far too large to be done in tiny steps.	VRI Phase 1 retrofit of existing inventory to address overestimates of height. TRIM 2 imagery acquisition at 1:30 000 including scanning and digital models. Project began in 1999.	Ca2-A
Ca7	NO	DMoF **DMELP** FN-	4	Uncertain distribution of critical habitats and home range areas for IWMS species (Fisher) in the Bob Quinn/Iskut valley	2.21	LRMP	LRMP, TSA	It is required baseline information for the implementation of the CIS LRMP	Radiotelemetry of fisher to determine home ranges, critical habitats and mechanics of habitat selection. Habitat selection analysis and stand level habitat mapping for operational planning.	Ca7-A
Ca12	NO	**DMoF-** **DMELP** FN-	5	Uncertain distribution of critical habitats and access issues for caribou in the McBride River Valley. To apply adaptive management for forestry operations in this area, it is necessary to determine critical habitats	1.32, 1.24	TSR, LRMP	LRMP, TSA	It is required baseline information for the implementation of the CIS LRMP	Radiotelemetry of caribou and moose to determine movements, critical habitats and mechanics of habitat selection. Habitat selection analysis and caribou & moose stand level habitat mapping for operational planning.	Ca12-A

CASSIAR TSA

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies	Projects
Ca6	NO	DMoF- **DMELP** FN-	**6**	Uncertain distribution of critical habitats and access issues for IWMS species. Identification of critical wetland habitats and connectivity for forest operational planning and meet IWMS concerns	2.21	LRMP	LRMP, TSA	It is required baseline information for the implementation of the CIS LRMP	Aerial inventory with ground truthing of Trumpeter Swan nesting areas.	–
Ca11	NO	**DMoF** **DMELP** FN-	**7**	Inventory deciduous stand development post fire, especially in riparian areas. Research on differential growth and consumption rates of deciduous species when subjected to foraging pressure (Beaver and Moose) in different patch sizes	1.21	TSR, LRMP	LRMP, TSA	Previous TSR did not adequately reflect particular seral stage development pathways under natural disturbance regimes, nor the likely pattern of fire occurrence, so may not be allowing for development of certain stand types.	Inventory deciduous stand development post fire, especially in riparian areas. Research on differential growth and consumption rates of deciduous species when subjected to foraging pressure (Beaver and Moose) in different patch sizes	–
Ca5	NO	DMoF- **DMELP** FN-	**8**	Uncertain distribution of critical habitats and access issues for IWMS species. Identification of critical wetland habitats and connectivity for forest operational planning and meet IWMS concerns	2.21	LRMP	LRMP, TSA	It is required baseline information for the implementation of the CIS LRMP	Aerial inventory with ground truthing of Trumpeter Swan wintering areas.	–
Ca3	NO	**DMoF** DMELP FN-	**9**	Need to identify the important recreation trail features that should be addressed in TSR and other important land use decision making processes.	5.13	LRMP, TSR	TSA	An inventory of existing recreation trails is required to fill this information gap, including measures of existing use, condition, opportunities and cost of improvements or management.	Complete a Recreation Trail Inventory of recreation access for development of a district Recreation Strategy and Management Planning.	–
Ca10	NO	**DMoF-** **DMELP** FN-	**10**	CIS LRMP indicated Klappan River valley to commence large mammal studies before timber harvesting is permitted. It is necessary to initially prepare a multiyear plan for the studies.	1.11, 1.22	LRMP	LRMP, TSA	It is required baseline information for the implementation of the CIS LRMP	Large mammal research and inventory plan for the Klappan River area deferral	–
Ca9	NO	**DMoF** **DMELP** FN-	**11**	Uncertain distribution of critical habitats and access issues for species. Identification of critical habitats and connectivity for forest operational planning for CIS LRMP	1.32	LRMP	LRMP, TSA	It is required baseline information for the implementation of the CIS LRMP	GPS Radiotelemetry of mountain goats to determine critical ranges; connectivity of ranges; access mgmt for the Klastine and Todagin Mountain blocks	–
Ca8	NO	DMoF **DMELP** FN-	**12**	Uncertain significance of Lower Stikine and Iskut confluence. LRMP table indicated survey to determine if area met the status for "waterfowl or wildlife sanctuary"	1.32	LRMP	LRMP, TSA	It is required baseline information for the implementation of the CIS LRMP	Waterfowl Population and habitat inventory of Stikine-Iskut River Confluence	–

KISPIOX Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Priority and Issue #	Proponent	Regional Issue #	Significance of Issue	Knowledge Building Requirements	Anticipated Benefits	Targets and Performance Indicators	Origin of Issue	Scope	Projects
H, M, L with ranking (H1, M3)			Risk to environmental and forest resource values, potential contribution to increased certainty around forest management decision. Specific strategic decisions or land use plan implementation that the issue is affecting or in which there are opportunities to address the issue (including usefulness or relevance to the decision, urgency and timing for the decision it is intended to support).	Includes recommended activities and specific projects.	How will the knowledge lead to improvements in SSFM? What are the main benefits expected? How will the knowledge be used in specific forest management plans and decisions?	Specific targets and performance indicators of success.	Plan or process where issue has been identified, or where decision making would be improved.	Geographic scope of the issue.	
Ki1-H1	**MoF**	**1.32**	No reliable funding sources for updating forest cover inventory data. Forest cover inventory data (maps and database) is used as a basis for resource management decisions. Data must be current and accurate. Without current and accurate forest cover inventory information, important forest management decisions and processes such as AAC analysis and determination and landscape unit planning will not be reliable as they are based on the information contain in the inventory.	At a minimum, the forest cover inventory should be updated every 2 years and timed with the TSR process. Specific ways to ensure accurate forest cover disturbance update include: imagery acquisition (satellite imagery, orthophotos, aerial photos); use of GPS information; data exchange with licensees	Forest management decisions will be based on up-to-date and accurate forest cover inventory information (e.g. stand composition, age, height, volume, etc.). The inventory data is used as the main information source for projects and decisions related to LUP, LRMP implementation and TSR. As these plans and decisions integrate environmental, social, and economic values they are key in improving SFM efforts.	The forest cover inventory will be updated every two years for disturbances. To meet this target, new imagery will be acquired by December 2001 for the entire area of the Kispiox Forest District. Update will be completed by June 2002.	TSR, LRMP, LUP, FN	Provincial	Ki1-H05
Ki2- H2	MELP	1.21	Inability to manage forest resources at the landscape level. The LRMP objectives for landscape level management are not yet implemented or met due to lack of critical knowledge. This increases the risk of habitat fragmentation, of loss in biological diversity, and has implications with regard to delivered wood costs.	Ecosystem management concepts and techniques will be implemented. This will allow retaining sufficient forest stand structure and wildlife habitat at a landscape level to satisfy biodiversity conservation objectives. Specific projects needed to implement the strategy include: • determining location of OGMAs and assessing WTPs requirements; • determining seral stages and patch size distribution and requirements; • determining connectivity corridor location and CWD requirements; • completing structural stage modelling; • completing PEM; and • Develop comprehensive LUP.	Together, these projects will allow the creation of landscape unit plans and objectives, and the development and implementation of TRP guidelines. This will be used in implementing the LRMP biodiversity objectives. These plans and guidelines integrate environmental, social, and economic values that are key in improving SFM efforts. Conservation of biological diversity is an identified criterion of SFM and many of the proposed projects can be used as indicators of SFM.	The success of the strategy is strongly dependent on the completion of the following projects: OGMAs and WTPs objectives will be prepared; seral stage and patch size distribution and requirements will be determined; connectivity corridors location and CWD requirements will be determined; structural stage model will be completed; PEM will completed; comprehensive Landscape Unit plans will be completed; and TRP guidelines will be implemented. The LUP will integrate the knowledge in one comprehensive plan, and the TRP guidelines will guide landscape level management efforts for the licensees. LUP success indicators and monitoring procedures will be developed at a later date.	LRMP, IWMS, LUP, TSR	LUP key ministry initiative	Ki2-H06, Ki2-H07, Ki2-H09, Ki2-H14

KISPIOX Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Priority and Issue #	Proponent	Regional Issue #	Significance of Issue	Knowledge Building Requirements	Anticipated Benefits	Targets and Performance Indicators	Origin of Issue	Scope	Projects
Ki3-H3	MoF MELP	3.11,3.12	Inability to evaluate impacts of development on water quality. Success in meeting the water quality objectives of the LRMP is unknown.	Three main strategies will allow the implementation of the LRMP objectives and the assessment of development on water quality: 1. Development of cost effective tools to assess water quality. Specific projects include complete calibration of the index of biological integrity for the Kispiox 2. Implement water quality assessment tools. Implement and monitor biologic integrity assessment. 3. Assess level of sediment delivery of forest roads. This strategy will be met by mapping sediment sources for unnatural sources	Data on water quality will allow the assessment of development impacts on water quality and will allow the development of adaptive strategies to meet the LRMP objectives. Conservation of soil and water resource is a specific criterion of SFM (CCFM) and the projects listed here will give decision-makers knowledge needed to ensure the maintenance of the living substrate for forest lands.	The success of the strategies in strengthening SFM decisions is intimately linked with the calibration of the biological integrity index, and of the implementation and monitoring of the index. Mapping and monitoring of unnatural sediment delivery sources for the Kispiox River watershed is another target and indicator of success in implementing the strategies. The mapping and monitoring will lead to the implementation of adaptive management concepts, which are crucial in SFM.	LRMP, LUP	Kispiox, PR Region	Ki3-H04
Ki4-H4	MoF	1.32, 1.21	Inability to assess current state of forest cover attributes due to lack of updated air photos. The most current air photos available for the Kispiox Forest District were taken in 1992. The photos are used as a basis for many mapping and inventory projects (e.g. OGMA, FEN, WTP, and seral and structural stages) needed for LRMP implementation and LUP process. Natural changes in species composition and stand structure must be captured when doing the above projects and 8 years old photos are not suitable for this task.	The strategy to solve this issue simply involves the collection of new air photos. This should be done on a five years cycle, and the photos should be taken at a scale of 1:15,000, digitally scanned and triangulated. These photos would help meet SSFM objectives and would be detailed enough to meet most operational requirements.	New air photos will allow capturing changes in the forest cover attributes that are not captured through the update process or growth and yield models. They will also allow the complete and accurate depiction of the forest at one specific moment in time. This "snapshot" is needed as input to models (wildlife, PEM) and determination of OGMAs, WTPs, and FEN. These projects are in turn an integral part of the biodiversity consrvation objectives stated in the LRMP and by CCFM.	New air photos for the entire district should be acquired in 2001 or 2002 at the latest.	LRMP, LUP	Region	Ki4-H08
Ki 5-H5	MoF,MELP, SCI	1.23	Inability to assess impacts of timber harvesting on riparian habitat, particularly around S4, S5, and S6 streams. There may potentially be unnecessary constraints in timber access and supply due to uncertainties related to stream classification and riparian habitat requirements. Riparian habitats are small, but critical habitat types. The Forest Practices Code outlines mngt practices within riparian habitats. However, there is uncertainty as to whether these practices adequately protect & conserve non-timber resources associated with streams. This has potential impacts on timber supply, delivered wood costs, landscape unit obj. and LRMP strat. implementation.	The following knowledge is needed to address the issue: -Accurate 1:20,000 stream classification: -Quantitative comparison of managed stand types and natural stand types in riparian management zone; -Quantification of the effects of a range of timber harvesting prescriptions, and guidelines for stream crossing. Also requires monitoring; -Quantification of riparian stand attributes associated with habitat use by semi-aquatic mammals and amphibians.	This knowledge will be used to develop and implement landscape level objectives and operational guidelines for the protection and conservation of riparian habitat. These will lead to improvements in meeting LRMP riparian areas objectives and strategies, in the conservation of fish and fish habitat values, and in meeting the SFM biodiversity and soil and water criteria.	Specific targets include the completion of the identified projects. One performance indicator consist in the number of kilometres of stream sampled or classified. Other adaptive management strategies and monitoring tools and methodologies will be developed as part of the listed projects.	LUP, LRMP, TSR	Region	KI5-H01

KISPIOX Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Priority and Issue #	Proponent	Regional Issue #	Significance of Issue	Knowledge Building Requirements	Anticipated Benefits	Targets and Performance Indicators	Origin of Issue	Scope	Projects
Ki6-H6	MoF, SCI, MELP	1.21, 2.21	Inability to assess impacts of timber harvesting activities on fish and wildlife population and fish and wildlife habitat. Currently unable to implement LRMP strategies and evaluate success in meeting LRMP objectives for fish and wildlife habitat and population. This leads to uncertainties in management decisions that may have effect on effective habitat and population, and delivered wood costs.	Three main strategies will allow knowledge gain that will be used to assist with LRMP implementation and monitoring and thus, improvement in strategic decision making. 1. Assess wildlife habitat at landscape level. This will be realized through: • Field verification of wildlife habitat suitability mapping(MoF/MELP/SCI) for goat, moose, deer, and grizzly bear; • Wildlife habitat suitability mapping for marten and fisher with field verification. 2. Assess fish and wildlife habitat at the stand level. Specific projects include: • Northern Goshawk nest inventory with quantification of response to timber development (SCI); • goat telemetry project (MELP); • bull trout studies (MELP). 3. Assess impact of timber harvesting activities on wildlife population. Specific projects include: • monitoring and evaluation of the goshawk management plan (SCI); • habitat supply model (MoF/MELP).	A better knowledge of areas providing suitable habitat attributes for wildlife and of the spatio-temporal use of forested areas by wildlife will lead to the development of management strategies that will focus on habitat diversity and habitat preservation. It will also lead to more certainties and confidence to stakeholders. This knowledge will be provided by the model, the goshawk nest inventory with quantification of post fledging areas, the goat telemetry project and the bull trout habitat inventory. These strategies, which are critical in implementing the LRMP and developing LUP, will be monitored through the habitat supply model and the goshawk management plan monitoring project to assess their success in meeting SFM objectives.	A habitat model will be developed for goat, grizzly bear, moose, and mule deer. The resulting maps and database, together with the information from the bull trout, goat, and goshawk inventory projects, will form the basis for developing and implementing landscape level management strategies for these resources. A habitat supply model will be developed for goat, grizzly bear, moose, and mule deer (LRMP species). This model will be used to evaluate the impacts of harvesting practices on wildlife habitat. A goshawk management plan is in development and its monitoring will allow the implementation of adaptive management techniques concepts.	LRMP, IWMS, LUP, TSR	Provincial	Ki6-H02, , Ki6-H03, Ki6-H010
Ki7- M1	MoF	2.18 (1.32, 2.19, 5.42)	Botanical forest products are not integrated in forest management decision-making processes. LRMP objectives are not met and the botanical forest products strategies cannot yet be implemented. Moreover, the MoF mandate of managing all forest resources is not met. This creates conflicts with other resource uses, the potential of damaging/losing botanical resources, and of missing revenue and employment opportunities.	The following strategies will allow the integration of botanical forest products in forest management decisions and LUP, and the implementation of the LRMP: 1. Gain understanding of botanical forest product ecology. Specifically: • Suitability mapping for pine mushroom, berries, and medicinal plants • Autocology assessment of key species 2. Analyze socio-economic aspects of botanical forest products. This will be done through: • Socio-economic analysis of pine mushroom	Knowing the ecology and autocology of botanical forest products and their socio-economic benefits will allow the development of management strategies and objectives, the implementation of key LRMP objectives, and the development of LUP. As these plans integrate environmental, social, and economic values that are key in improving SFM efforts.	Specific targets that will allow evaluating the success of the strategies include the completion of pine mushroom habitat suitability mapping, the completion of pine mushroom autocology studies, and the completion of a socio-economic analysis. Indicators and monitoring procedures will be determined later.	LRMP, TSR, LUP, FN	Kispiox, Kalum	Ki7-H12

KISPIOX Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Priority and Issue #	Proponent	Regional Issue #	Significance of Issue	Knowledge Building Requirements	Anticipated Benefits	Targets and Performance Indicators	Origin of Issue	Scope	Projects
Ki8 -M2	MoF	2.13	Field reports suggest that tomentosus root disease is frequent in mature and immature stands. Volume losses and mortality associated with the disease are not captured in AAC calculations because they are unknown. This also has serious impact on fibre flow and delivered wood costs.			A report on this issue will be completed in 2000 to be incorporated into TSR	TSR, LUP	Kispiox	
Ki9- M3	MoF	5.13, 5.41, 6.x1	Inability to meet public needs for recreation sites in under-developed portions of the district, to meet management plan established under the Heritage Conservation Act, and to establish a long-term vision for recreation. The Kispiox LRMP has many specific recreation objectives and strategies affected by this issue. Specifically, the Forest Recreation Strategy is now three years overdue, and public expectations are not met. The Yukon Telegraph Trail Management Plan has been established under the Heritage Conservation Act, but the plan can not be implemented without first knowing the exact location of the trail.	The following projects will allow to address the recreation issue: • Locate Yukon Telegraph Trail; • Prepare strategic recreation plan.	The knowledge that will be gained through the Forest Recreation Strategy and the location of the Yukon Telegraph Trail will be used to meet key LRMP objectives and strategies and the Multiple Benefits to Society criterion of Sustainable Forest Management (CCFM).	Specific targets include preparing a Forest Recreation Strategy, and locating the Yukon Telegraph Trail. Indicators of success in meeting LRMP strategies and objectives will be determined later.	LRMP, LUP	Kispiox	Ki9-H11, Ki9-H13
Ki10 -M4	MELP	1.32, 1.21, 2.21	Inability to assess impacts of timber harvesting on rare ecosystems. As per LRMP objectives, rare ecosystems and plant communities must be maintained. The inability to know where these resources are located may lead to adverse harvesting impacts that could result in the harvest of red/blue listed species or ecosystems	Rare ecosystems will be identified and management strategies will be developed. Specific projects include: • Rare ecosystem inventory; • Evaluation of the success of the rare ecosystem DOP	The impact of harvesting activities can not be assessed without knowledge related to the type and location of rare ecosystems and plant communities. Similarly, the effectiveness of the local DOP at maintaining rare plants and ecosystems must be evaluated to assess the impact of harvesting activities. This knowledge will allow decision-makers to ensure rare ecosystems and plant communities are maintained. It will also allow the monitoring of ecosystem and population level changes, which is a recognized indicator of SFM.	The success of the strategy depends on the completion of a rare ecosystem inventory. It is also dependent on the application of the rare ecosystem DOP and of the monitoring of its success at identifying and maintaining rare plants and ecosystems.	LRMP, LUP	Kispiox	
Ki11- M5	MoF	2.13	Needle blight occurrence seems to be increasing in pine plantation. Needle cast normally only slows tree growth. However some mortality might be occurring due to secondary pathogen infestation. Set back in tree growth (AAC and delivered wood costs implications) can also be expected.			A report on this issue will be ready in 2000 to be incorporated in TSR	TSR	Kispiox	

KISPIOX Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Priority and Issue #	Proponent	Regional Issue #	Significance of Issue	Knowledge Building Requirements	Anticipated Benefits	Targets and Performance Indicators	Origin of Issue	Scope	Projects
Ki12- L1	MoF	2.11	Recent inventory audits and local observations suggest that site index estimates for regenerated stands are underestimated. Errors in site index estimates would result in inaccuracies in growth rate and volume estimates of regenerated stands. This would have significant impact on the long term AAC level, and potentially, on delivered wood costs.	Productivity assessments will allow the determination of accurate site index estimates for regenerated stands. Specifically: • See regional issue 2.11 and 2.12	Better site index estimates will result in better volume and growth rate estimates, which will increase the certainty around future AAC levels.	See regional strategy for issue 2.11 and 2.12 Chief forester AAC implementation direction	TSR	Provincial	Ki12-Re?
Ki13 -L2	MoF	2.13, 2.19	Risk of losing grazing habitat due to presence of noxious weeds. Protecting and conserving range resources and controlling noxious weeds is part of the LRMP. Loss of grazing habitat would result in a reduction in carrying capacity of crown range, loss of revenue and community stability.	In order to maintain grazing habitat and controlling noxious weeds, the following strategies will be implemented: 1. Assess extent and distribution of noxious weeds. Specifically: • Conduct a noxious weed inventory 2. Implement noxious weeds control measures. These include: • Management regime development • Manual &chemical control measures 3. Assess extent and distribution of range ecosystems. Specifically: • Conduct range ecosystem inventory	Knowing the extent and distribution of noxious weeds and range ecosystem will allow to reduce the risk of losing grazing habitat because it will lead to the development of noxious weed control measures and better range management. This will in turn allow meeting the LRMP objectives for range. The LRMP integrates environmental, social, and economic values that are key in improving SFM efforts.	Specific targets include completing a noxious weed inventory, developing and implementing noxious weeds control measures, and completing a range ecosystem inventory. Performance indicators and monitoring measures will be determined later.	LRMP, LUP	Kispiox	
Ki14- L3	MoF	2.13	Recent aerial surveys indicate an increase in balsam bark beetle distribution and mortality. Trees attacked by the beetle are not currently being actively targeted for salvage and volume losses are not captured in AAC calculations because they are unknown. This also has serious impact on fibre flow and delivered wood costs.	Monitoring of bark beetle mortality must continue . Strategies to capture salvage mortality and capture volume losses must be incorporated in TSRs	Better AAC determinations of mortality and loss	Continued FH monitoring through overview flights and detailed forest health monitoring. Incorporation of FH data into TSR	TSR, LUP	Kispiox	
Ki15- L4	MoF	2.11	OAF values used for projecting growth of regenerated stands may not be appropriate for backlog stands. Incorrect OAF estimates would result in inaccuracies in growth rate and volume estimates of regenerated stands. This would have significant impact on the long-term AAC level and delivered wood costs.	An OAF study would permit to determine what value should be used in regenerated stands growth models and adjust the default value currently used, if needed. • OAF assessment in backlog stands	Better OAF estimates will result in better volume and growth rate estimates, which will increase the certainty around future AAC levels.	OAF study to be completed and results incorporated in next TSR process (as requested by the chief forester).	TSR	Kispiox	

KALUM Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies	Projects
Ka1	New	DMoF	H	Inadequate data sharing between all stakeholders, government agencies and FRBC, especially regarding what inventories have been accomplished.	1.33	LRMP, TSR, Certification	Regional	Inefficient planning, duplication of data, overlapping information, $ losses.	Develop an integrated data warehousing of all inventory products, perhaps linked through common internet access.	_
Ka2	New	DMoF SCI West Fraser	H	Site productivity seems to have been underestimated in a number of areas. There is a need for growth and yield data in even and uneven aged stands (See also Issue Ka6).	2.11, 2.12	TSR, Certification	District	Potential losses in AAC.	Establish a wider sample of G&Y plots, encompassing even and uneven aged stands. Undertake a retrofit of forest cover data using VRI	_
Ka3	New	DMoF	H	Forest Cover maps are outdated and often inaccurate. This is causing problems for accurate AAC forecasting, and accurate planning.	1.32	TSR, Certification	District	Potential losses in AAC; inaccuracies in G&Y tables; operational uncertainty regarding development planning.	Need to fly the entire District every five years for aerial photography to update Forest Cover.	_
Ka7	New	West Fraser	M	Recreational facility inventory for the TFL and TSA	5.42, 6.1	TSR, Certification, LRMP	West Fraser TFL and TSA	Recreational sites and trails are not well integrated into development planning. LRMP requires implementation	Undertake comprehensive mapping of sites, and integrate map layers into District data warehousing.	_
Ka8	New	DMELP DMoF SCI West Fraser	H	Identification of critical Grizzly Bear habitat, and establishment of habitat indicators and planning targets	1.21, 2.21	LRMP, TSR, Certification	District	Grizzly bear population targets, and critical habitat protection guidelines in s. Kalum LRMP, have uncertain impact on AAC. There is a need to develop mapping to identify these areas in rest of District	Complete PEM mapping for entire District. Derive Grizzly bear habitat capability, suitability and effectiveness layers for entire District. Map impacts of habitat protection guidelines from LRMP.	Ka19-A PEM
Ka9	New	DMELP DMoF SCI West Fraser	H	Ungulate winter range. Critical winter range, with provisions for removal from THLB, has not been fully identified for Mtn Goat, Moose and Mule Deer	1.24	LRMP, TSR, Certification	District	Identification of ungulate winter range results complete or partial removal from THLB with resultant impacts on AAC and need to develop silvicultural strategies.	Complete PEM mapping for entire District. Derive Mtn Goat winter habitat suitability layer (as per LRMP) and validate with aerial survey. Derive moose and deer winter habitat suitability and capability layers, and validate with aerial survey or sign indices.	Ka19-A PEM
Ka12	New	DMoF DMELP	L	Lack of proactive planning to integrate biodiversity with timber flow in heavily harvested, high productivity zones (Mgmt Emphasis Areas: Skeena E & W; Kitimat Valley; E. Kalum valley)	1.21, 2.19	TSR, Certification	Southern part of District	Opportunities to restore, maintain or enhance biodiversity and ecosystem function in highly productive bottomland habitats, already heavily harvested, are being missed through lack of planning to integrate with fibre flow objectives. There is a potential risk to stand health and AAC through disease and infestation impacts, and a risk to maintaining and restoring lost biodiversity.	Invest in using existing knowledge to model strategies to improve age class distribution and stand structure for biodiversity, improve forest stand health, and establish monitoring protocols.	_
Ka13	New	DMoF	L	Lack of planning tools to manage pine mushroom harvesting	2.17, 2.18	Certification	District	Opportunities to sustain and perhaps enhance a harvest of pine mushrooms are being lost because there are no planning tools allowing projections of mushroom suitability and capability.	Complete PEM for entire District. Develop pine mushroom habitat suitability and capability mapping.	_

KALUM Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies	Projects
Ka14	New	DMoF	L	Small wood utilization strategy. There is a lost opportunity for developing more added value wood products from small wood	2.41	TSR, Certification	Dsitrict	Lost opportunities for economic activity in the forest sector.	Undertake an economic planning strategy for assessing feasibility of investments in added value products form small wood.	–
Ka15	New	DMoF, DMELP	M	Hardwood management strategy. Hardwood (Populus and Betula) is becoming an increasing part of the AAC, and there is not a strategy in place to integrate sustaining biodiversity of these productive stands, with silvicultural strategies and fibre flow strategies.	2.17, 2.21	TSR, Certification, LRMP	District	Hardwood habitats have had inappropriate investment in softwood silviculture with impacts on fibre flow and on sustaining the rather unique biodiversity of these hardwood ecosystems (e.g., rare plant communities).	Planning team (agencies and licensees) to assess current status of the inventory, silviculture, biodiversity status and fibre flow potential of hardwood habitats, to make recommendations for strategic directions.	–
Ka16	New	DMoF DMELP West Fraser	M	Partial cutting strategy. Partial cutting silviculture is appropriate when considering coarse filter mgmt under the biodiversity guidebook, and when addressing visual quality objectives. There is a need for an update on the economic and silvicultural feasibility of partial cutting strategies.	2.12, 2.19, 2.16	TSR, Certification, LRMP	District	Partial cutting may impact fibre flow patterns and timing, but has the potential to improve biodiversity conservation and visual quality objectives. These trade-offs need to be addressed.	Planning team (agencies and licensees) to assess current status of economic feasibility, biodiversity maintenance and visual quality assessments for various partial cutting strategies.	–
Ka17	New	RMELP, DMELP	M	Red and blue listed plant communities. Various hardwood and estuarine plant communities are poorly described but known to be at significant risk because of ongoing development. Key areas are the Skeena Islands cottonwood communities, and the Dala / Kildala estuary (see also Issue Ka15).	2.21	Certification, TSR, LRMP	Skeena valley, Dala / Kildala	Significant elements of biodiversity are currently threatened with extinction or significant loss without the necessary inventory to document their existence and distribution.	Field inventory of hardwood habitats in floodplain hardwood stands of the Skeena Islands and the Dala Kildala estuary.	–
Ka18	New	RMELP	L	Skeena Valley Moose Population Inventory. Status of the Skeena Valley moose population is in question because of recent loss of wintering range.	1.24	LRMP	Skeena Valley	Sustaining the harvestable levels of moose available to local hunters is in question.	Aerial stratified block inventory of moose in winter	–
Ka19	Existing	DMELP, SCI West Fraser	H	Predictive Ecosystem Mapping. Develop a site series map layer at 1:20,000 based on Forest Cover and TRIM data, for use in various planning exercises.	1.32, 1.21	LRMP, TSR, Certification	District	PEM is a baseline inventory on which a wide range of other planning exercises are based (e.g., ungulate winter range, grizzly bear habitat mapping, pine mushroom mapping). Without this layer, much of the other planning is highly compromised.	Continue ongoing development of PEM (District subzone specific algorithms)	–
Ka20	Existing	SCI	H	Complete planned investment in TRIM-2.	1.32	TSR	Kalum TSR	TRIM-2 is to provide a more accurate topographic and watershed data layer for TSM, stream classification, operational planning.	Depending on ability to fly for appropriate photos in 2000, continue to invest in completing the work.	–

KALUM Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies	Projects
Ka21	New	SCI	H	TEM upgrade. Existing Terrestrial Ecosystem Mapping data are not all digital. Need to transfer these to a digital database	1.32	TSR, Certification	District	Without digitization, the TEM data are not being used to full advantage.	Undertake digital transfer	–
Ka22	Existing	SCI	H	Fish and Fish Habitat Mapping in the Buffalo Head charts (SCI), and 9 drainages in the Kalum and Nass TSAs (West Fraser). Complete ongoing work to reach stream classification.	1.23	TSR, Certification	District	Operational planning requires stream classification.	Fish and Fish Habitat inventory as per RIC standards	Ka22-A (SCI) Ka22-B (West Fraser) Ka22-C (West Fraser)
Ka23	Existing	SCI	M	Terrain Stability Mapping. Complete ongoing TSM	2.32	TSR, Certification	District	Operational planning requires TSM	TSM as per RIC standards	–
Ka24	New	SCI DMoF	M	Operational Trials and Research Sites. There is no central data warehousing of these sites and trials, so they are at risk of being forgotten, lost or made ineffective.	1.32	TSR	District	Various trials and research sites may be lost (harvested), or made ineffective (access mgmt) if they are not thoroughly catalogued and mapped, with provisions for ongoing digital update.	Develop interagency team to catalogue and digitally map this information , and arrange data warehousing and custodianship	–

NORTH COAST Forest District

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Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies	Projects
NC1	Existing	DMoF, RMoF	H1	There is potential to include poor Cw, Yc, and Hw sites in the current operability however ecological suitability and economic feasibility questions must be addressed.	**1.32**	TSR	TSA, (PROV)	Will provide information for TSR 3 determination and will be transferable to other Forest Districts. Has the potential to increase the land base available for harvest or replace landbase that has other higher non-timber demands. (HYP3)	Continue with implementation of Year 4 of HYP3 project as per Chief Forester recommendations.	NC1 - A, NC1 - B, NC1 - C
NC2	New	DMoF	H2	The NC Timber Supply Review is an extremely important factor in the AAC determination for the North Coast TSA. There is uncertainty around operability and consequently THLB, how can the uncertainty be reduced? How can we improve upon the various factors being used in TSR so that the results of the review more accurately reflect actual conditions?	1.32, 1.21, 2.11	TSR	TSA	The public input received during the TSR2 process indicates there is growing concerns around the reliability and accuracy of the operability mapping for determining both the AAC and local planning initiatives. New inventories, and possibly more permanent sample plots, will provide a more reliable information base from which planners and analysts can make predictions on the timber supply for the North Coast TSA. Will provide greater certainty for the CF AAC determination. (PEM)	Implement PEM standards for entire TSA. Complete an operability mapping using market based factors. Resultant information would show: base operable stands (operable land given any market condition), market potential stands (cedar and white wood). This is funded through the North Coast LRMP.	NC2 - A
NC3	Existing	DMoF	H3	There is a high level of uncertainty around the inventory estimates of site productivity which has a huge impact on minimum harvestable ages and timber supply. How do we refine or improve our site productivity estimates?	**2.11, 2.12**	TSR	TSA, (PROV)	Will provide accurate information for TSR 3 AAC determination. (ECO Yield, SIBEC)	Intense sample data collection has been completed for the CWH vm and CWH vh subzone variants. As part of the partition cut assigned to the most northern portion (CWH wm) of the TSA, site index analysis must now be completed for the that area so that the upcoming TSR III can use site index attributes compatible with the rest of the TSA.	NC3 - A
NC4	New	DMoF	H4	Average coastal figures were used to account for riparian reductions in the last TSR round. During the Public Review period, the forest industry recommended a review of localized conditions. They have doubt about the applicability of the coastal averages for Riparian Reserve Zones and Riparian Management Zones to the North Coast TSA. They expressed a willingness to contribute to further study to clarify the appropriate retention values to apply in future timber supply analysis.	1.23, 3.11	TSR, LRMP, LU Planning, Strategic planning	TSA	Will aid in determining impact on the THLB using local values. Will aid decision making for AAC, LRMPs and FDPs.	Obtain local data for practices in riparian management areas. Create digital coverage of all existing stream classification information. Conduct a review of past practices in riparian management zones.	NC4 - A
NC5	Existing	Df loF	H5	A Visual Landscape Inventory has not been completed for all major travel corridors in the TSA.	**5.13, 6.1**	TSR, LRMP, LU Planning, Strategic planning	TSA	Will aid in determining THLB. Will aid decision making for LRMPs and FDPs. (VLI - Final).	Use in-house resources to finish project as quickly and cost effectively as possible.	NC5 - A

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NC6	Existing	DMoF, FN	H6	The District needs to incorporate the collected TUS information into the existing AOA modeling which will make land use planning much more efficient. The Results will identify how operations can be conducted and improve knowledge of cultural heritage resources which require further archaeological study?	5.21	TSR, LRMP, LU Planning, Strategic planning	TSA	Management strategies and potential impacts to timber supply will be better quantified. Will aid decision making for LRMPs and FDPs. (TUS-AOA Integration)	The existing AOA is now ready for complete integration of the TUS information collected by the various bands within our TSA. Implement proposed schedule, which will allow for all TUS information to be integrated into the existing AOA over the next 3 years, with assistance from Arch Branch and Regional Personnel	NC6 - A
NC7	New	WFP, Interfor, DMoF, DMELP, RMELP	H7	The Marbled Murrelet is a provincially red listed species and occurs on the BC coast. Is there a significant potential forestry/murrelet conflict, and if so, what are the potential conservation strategies?	2.21	LUP, LRMP, TSR	DNC, PROV	Will identify conservation strategies based on a systematic assessment of nesting abundance and habitat for the North Coast Forest District. The information obtained will be applicable to other TSAs on the coast and will be done in conjunction with other licensees, MELP and MOF. Will help quantify impacts on timber supply.	Conduct a systematic assessment of nesting abundance and habitat for the North Coast TSA. Radar surveys and telemetry of areas stratified under preliminary mapping project. Determine if there is a potential forestry/murrelet conflict, and if so identify potential conservation strategies.	NC7 - A
NC8	New	WFP, DMELP, RMELP	H8	How do we ensure the appropriate selection and establishment of OGMAs and WHAs?	1.21, 2.21	LRMP, TSR, LU	TFL25/ DNC	Requirement to have a good knowledge base that will allow the selection of needed habitat for species such as Marbled Murrelet and bears and protection of red listed plant communities.	Conduct radar/telemetry surveys. Based on the outcome of the Marbled Murrelet study and other on going studies relating to bears, identify OGMAs and WHAs that manage for the critical habitat values associated with these species.	NC8 - A
NC9	Existing	WFP, RMELP	H9	How do we manage for Kermode Bear habitat?	None	LRMP, LU, FDP	DNC	An understanding of the Kermode bear is needed to develop management strategies that will gain public trust and ensure habitat protection.	Gain a better understanding of the cause of Kermode bear coloration (genetic research) and the habitat needs and requirements so detailed management strategies can be developed.	Nc9 - A
NC10	New	WFP	M10	A need for good Growth and Yield and ecosystems information in the TFL to aid in setting management strategies to deal with second growth.	1.32, 2.11	TSR	TFL 25/ DNC	The current forest inventory is dated and the need for detailed forest attributes is become critical for addressing issues such as timber supply, wildlife habitat and biological richness. Refinement to both mature and second growth forest attribute information is needed to address those issues not considered when the original inventory was completed.	Complete a new inventory to current Vegetative Resource Inventory standards.	NC10 - A
NC11	New	WFP	M11	Monitoring and Adaptive Management. How can we ensure we are meeting the certification requirements without having the ability to monitor our forest management practices and modify them when required?	1.12	Certification	TFL 25/ DNC	Requirement to have good inventories for the development of base lines on which to monitor change.	Complete a new inventory to current Vegetative Resource Inventory standards.	–

NORTH COAST Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies	Projects
NC12	New	DMoF	M12	Using the BC Geological Survey maps, Reconnaissance (1:250,000 scale) karst potential mapping and inventory within BC has been created. The approach was to develop a series of karst potential maps to predict the likelihood and level of karst development within various geological units. The project has successfully rated any bedrock units that have potential for karst development. Karst potential maps should be considered preliminary and have yet to undergo any significant field testing or verification. There is a lack of certainty around location of Karst and associated features within the THLB. These features can be sensitive and critical habitats. A strategic approach at managing these karst environments needs to be developed.	1.32, 1.23, 1.21	LRMP/TSR	TSA/TFL25	Current mapping is based on the BC Geological Survey maps (large scale 1:1,000,000). Need to refine these tools to ensure appropriate management of Karst terrain and associated features. Will provide information for TSR3, LRMP and information for management of Karst features within the district for timber resource and non-timber resource users.	Using Reconnaissance (1:250,000 scale) karst potential mapping, conduct a Karst field reconnaissance to identifiy the location of Karst features within the district.	NC12 - A
NC13	New	Interfor	M13	Coastal Log Dumps are increasingly putting constraints on resource management on Coastal BC and specifically on the North Coast. Is there a significant impact on the AAC and resource management from coastal log dumps, and if so, what are ways to mitigate the impact.	1.11, 2.21	LUP, TSR	TSA, (PROV)	Will provide for the establishment of key fish habitat indicators and site suitability criteria (decision making model) to be used by planners for land use planning. This knowledge will be transferable to all coastal districts.	Improve the agency' review process and develop Best Management Strategies for mitigation of log dump activities on marine habitat by implementing a technical Working Group and development of effective mitigation strategies for publication.	NC13 - A
NC14	New	Interfor, DMELP, RMELP	M14	Ungulate (i.e. Moose and Mountain goat) winter range has been an on-going concern with Industry and MELP. What habitat attributes and supply are needed to sustain viable populations in the North Coast TSA?	1.24	LUP, TSR	TSA	Will provide for the establishment of key performance indicators and habitat targets which will be utilised by land use and resource management planners. Some of this knowledge will be exportable to other TSAs province wide. Will help quantify impacts on timber supply.	Identify critical ungulate winter range. Determine winter distribution of moose, goat and deer relative to snow loads in those areas. Carry out inventory flights to estimate goat populations. Radio-telemetry information determining coastal goat movement patterns. Population inventory would provide more well-rounded understanding of population size, and from there, estimate the % of population using each identified winter range area. Can identify any critical population problems. Population inventories are best conducted in September.	NC14 - A

NORTH COAST Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies	Projects
NC15	New	WFP	M15	Through the Central Coast LRMP Process some Study Areas will become Class A Parks. A decision as to their status is imminent (i.e. Spirit Bear study area). Potential timber supply reduction for TFL 25 holder and the North Coast TSA. How do we manage for the Timber Supply Reduction?	None	LRMP, TSR	TFL 25/ DNC	Imminent creation of a protected area for the Kermode bear. Loss of operable forest land. Estimated 50 000 m3 AAC impact to TFL 25 plus unknown impact to TSA harvest.	Conduct inventory analysis to determine impact on AAC levels to TFL 25 and North Coast TSA. Complete growth and yield analyses of current second growth areas, which may be candidates for enhancement, to offset the loss of potential forest lands to park status. Conduct a fertilization feasibility study.	NC15 - A
NC16	Existing	DMoF, DMELP, DFO	M16	How do we manage harvesting around and crossing S4-S6 streams to adequately protect and conserve them?	**1.23, 3.11**	TSR, LRMP, LU Planning, Strategic planning	Province, DNC	Develop, if needed, management practices relating to harvesting adjacent to small fish-bearing streams and direct tributaries to fish bearing streams.	Based on the outcome of the provincial review, develop strategies that manage for the critical habitat values associated with these streams.	–
NC17	New	DMoF	M17	Porcupines have a significant yet unquantified effect on the productivity of district 2nd growth stands.	2.14	TSR	TSA	Losses from porcupine feeding have been a concern for the past 15 or more years. Although losses have been observed for a long period of time the effect on timber supply has not been quantified for the North Coast TSA.	The Chief Forester has directed the district to continue monitoring the damage. Complete impact analyses to determine the volume losses due to porcupine damage. See Forest Health Information Sub-Program.	–
NC18	New	DMELP, RMELP	M18	Require better knowledge of important grizzly bear (Ursula arcs) habitats (maintenance and protection) for current and future NCFD forest development planning as a part of an overall BC-wide conservation strategy. Grizzly bears are a blue-listed species considered vulnerable in BC. All high priority watersheds should be evaluated. Habitat identification is needed for stand level habitat protection as Wildlife Habitat Areas (WHA), General Wildlife Measures (GWM) management objectives, and identification of second-growth candidates for treatments to improve bear forage quality or for landscape level management as part of a Higher Level Plan.	2.11, 1.21	LRMP, LU, FDP	DNC	There is an interest to determine the degree of overlap between the THLB and important habitats. Will provide for management strategies as it relates to Grizzly Bear populations, Grizzly Bear Management Unit's. Will help quantify impacts on timber supply.	Using suitability/ capability maps (developed for the NCLRMP) as an initial stratification, identify critical grizzly bear habitats in top priority watersheds (list once identified).	NC18 - A

NORTH COAST Forest District **ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT**

Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies	Projects
NC19	New	DMELP, RMELP	M19	Biodiversity Guidebook recommendations and provincial policies that influence implementation require critical district specific review; and an examination of the biological validity of NDT1 recommendations for this district given the nature of the land base.	1.21	LRMP, TSR, LU	TSA/TFL 25	By application of the coarse filter management, the key premise is that forest management will more closely resemble natural disturbance which will result in lower conservation risk. A NCFD biodiversity strategy is needed to ensure that both conservation and development goals are met.	A biodiversity risk assessment of the coarse filter approach within the NCFD.	NC19 - A
NC20	New	DMELP, RMELP	L20	The tailed frog is a blue-listed species occurring in the NCFD. Due to specialized habitat requirements, it is vulnerable to habitat loss and alteration associated with logging.	2.21	LRMP, TSR	TSA/TFL 25	Currently there is no set protocol to manage for tailed frog. Best Management Practices should be developed and implemented.	Geographically narrow the focus to areas where tailed frogs are most likely to occur; and to develop a protocol to apply to those areas (detection and best management practices).	NC20 - A
NC21	New	DMELP, RMELP	L21	A Goshawk conservation strategy should include retention which emulates natural spacing and size of nesting territories. At this time, patch size objectives can not be set during LU planning. Current biodiversity coarse filter measures to address needs are not in place.	2.21	SLUP, TSR	TSA/TFL 25	Best information suggests densities are higher than what we speculate would occur in the NCFD. Better information is required to ensure adequate conservation without undue timber constraints. Conservation options are being compromised in the absence of strategy implementation.	GIS analysis of forest cover data to identify potential retention areas. Call playback surveys to determine natural spacing of nesting territories. Develop training and educational materials to aid field identification of Goshawk.	NC21 - A, NC21 - B, NC21 - C
NC22	New	DMELP, RMELP	L22	Much of the known fisheries information for adult steelhead and anadromous cutthroat has been collected at times of the year when adult are not present in the systems.	1.32	FDP	TSA/TFL 25	To reduce risk of impacting fish or fish habitat, information with regards to the distribution of these species by watershed would be a useful aid facilitating reviews of proposed in-stream works and other activities.	Collation and interpretation of information on fish streams is currently underway as a NC LRMP strategy. Conduct reconnaissance surveys of anadromous steelhead and cutthroat trout.	NC22 - A
NC23	New	DMELP	L23	There is a need to mitigate development impacts to some of the more critical and sensitive habitats (floodplains, karst landforms, avalanche chutes, etc...) occurring in the NCFD.	2.21, 1.21	LU / FDP	TSA/TFL25	Although some guidebooks provide guidance for development in some of these areas, there is a need for a vision of future conservation or comprehensive development strategy in these more critical and sensitive habitats.	Management plan for the Skeena Islands and adjacent floodplain, for LUs with limestone and karst geologies. Conservation risk assessment protocol for karst and limestone ecosystems. Training regarding the identification of critical habitats.	–
NC24	New	DMELP, RMELP	L24	The bald eagle (Haliaeetus leucocephalus) is a species of management concern that is expected to receive Identified Wildlife status at some unspecified time in the future. There is a need now however, for district specific best management practices to provide greater certainty that forestry related operations proximate to eagle nests do not induce nest failures or nest abandonments (in contravention of S35 of the Wildlife Act).	2.21	LU	PROV TSA/TFL25	Although bald eagles are candidates for future Identified Wildlife status there currently are no management measures in place.	Localized areas for which the maintenance of eagle nesting density is identified as a key objective (popular wildlife viewing areas, anchorages and/or known concentrations of eagle nesting sites) should be identified for special management consideration. Fall and winter aggregations of eagles along higher order streams/rivers should be identified in order to implement enhanced riparian management as related to wildlife values (recommended in the RMA Guidebook). Fall/winter bald eagle surveys. Adaptive management towards BMP for operations near bald eagle nesting sites.	–

NORTH COAST Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies	Projects
NC25	New	DMELP, RMELP	L25	Minimize disturbance to birds (i.e. waterfowl, trumpeter swan) during sensitive periods. Requires protocol for log sort and barging activities, identification of key habitat areas for waterfowl.	2.21	LU, FDP	TSA/TFL25	Issue is not so much habitat damage as much as avoiding seasonal activity in close proximity to staging, seasonal and wintering areas.	Survey to identify waterfowl staging and seasonal areas, including trumpeter swan wintering areas	–
NC26	New	Interfor	L26	Terrain stability mapping found on the forest cover maps has been found to be suspect. There is no existing TSM level C coverage for the areas being covered by the administrative areas.	3.12	FDP	TSA	Terrain Stability Mapping – Level C is strategic in nature and is important when determining operable areas and in land use planning.	Maps showing terrain classification, soil erosion potential etc. will be developed which accurately reflect field conditions.	NC26 - A
NC27	New	FN	L27	First Nations and Governments paradigms on sustainability are at opposing ends of the resource management scale	5.11, 5.21	TSR LRMP LUP Strategic & Operational Planning	TSA/TFL 25	Discontent leading to pressure for Treaty Related Measures, involvement of ENGOs, Litigation, unauthorized activities.	Tsimshian Nation is entering Interim Measures Agreements through treaty negotiations. (Lead by MAA.) Work with First Nations in building capacity for developing resource management decisions.	–
NC28	New	FN	L28	How do we provide for the habitat requirements that support First Nations Traditional Uses?	5.21, 5.13	FN/ LRMP/ LU	DNC	Lost opportunities in using full range of non-timber resource. Will keep the focus on one resource, which in turn will be impacted more heavily. There is a concern that this is not sustainable management.	Support increased FN participation in managing the resource. (i.e. all levels of planning) Proceed with Interim Measures Agreements. Incorporate cultural heritage resource inventories in strategic land use planning. Higher Level Plans to ensure enough land base suitable for cultural and traditional use is maintained. Proceed with completing TUS on remainder of TSA.	–
NC29	New	FN	L29	How do we increase the participation of First Nations in the local forest sector economy? How do we continue to provide diverse local employment opportunities?	5.11	FN/ LRMP/ LU	DNC	Continued uncertainty in the forest industry and potential conflict. Impacts the socio-economic prosperity of First Nations. Continued reliance or dependency on social programs, deterioration of quality of life. Inability to retain a skilled workforce in communities with high level of unemployment.	Encourage licensees to employ FN where possible. Reinstate the Job Shadow Initiative. Award tenure to FN. Improve FN employment requirements in MOF contracts.	–
NC30	New	FN	L30	How do we ensure aboriginal rights and title are conserved in traditional territories?	5.21	FN	DNC	Potential conflicts. Potential loss of cultural heritage resources.	Proceed with Tsimshian Interim Measures Agreements.	–
NC31	New	FN	L31	How do we provide for investment certainty with respect to managing a forest resource land base over time?	5.22	FN	DNC	Potential loss of employment and investment in the forest sector.	Proceed with developing Higher Level Plan's. This will provide certainty in the land base which in turn will provide for more secure investments in all resources. Increase local FN involvement.	–

NORTH COAST Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Issue #	Status	Proponent	Priority	Management Issues	Regional Issue #	Origin of Issue	Scope	Impact of Issue	Strategies	Projects
NC32	New	FN	L32	What opportunities are there in reducing waste wood from our harvesting, handling and mill processes?	5.31	FN, LRMP	DNC	Lack of potential value-added opportunities. Greater return from the forest industry. Greater access and better use of fibre.	Encourage innovative forestry practices. Develop value-added manufacturing/marketing strategy for under-utilized fibre i.e. OSB/balsam Encourage an increase in local involvement.	–
NC33	New	FN	L33	How can we best manage access to forest resources to protect and conserve local resource values?	5.41	FN	DNC	Potential loss of resources of features.	Encourage increased FN participation in strategic land use planning. Incorporate FN resource use planning.	–

8.3 *Knowledge Strategy*

8.3.1 Regional Strategies

The following strategies were developed by the RPT to propose methods to address the issues identified by the RST, RPT and DPT. Each strategy's reference number corresponds to the relevant issue identified in the Matrix of CCFM Goals and Issues under Section 8.2.

Issue Reference #: 1.21

Title: RETENTION OR DEVELOPMENT OF APPROPRIATE FOREST STAND STRUCTURE AND ATTRIBUTES IN AREAS SET ASIDE FROM THE NORMAL HARVESTING ROTATION (e.g., RMZs, OGMAs, FENs).

Description of Issue:

This issue centres on uncertainty as to how to retain or develop sufficient forest stand structure (attributes and composition) and wildlife habitat (carrying capacity) at a landscape scale to satisfy biodiversity conservation objectives. Biodiversity conservation depends on applying using land use and management prescriptions for areas where timber harvesting in a normal economic rotation is precluded or restricted (e.g., Riparian Management Areas (RMAs), Old Growth Management Areas (OGMAs), and Forest Ecosystem Networks (FENs)).

The issue is closely related to 1.22, which raises the issue timber harvesting opportunities within these same land use designations and land management prescriptions.

The crux of this issue is ecosystem management, and the application of the Biodiversity Guidebook of the Forest Practices Code, which approaches this ecosystem management within coarse filter and fine filter issues. Through the coarse filter, landscapes are expected to retain most of their biodiversity, if landscape unit planning objectives for each of six characteristics approximate the values for those characteristics that would be found in the landscape under natural disturbance regimes. The six characteristics are: seral stage distribution; temporal and spatial distribution of cut and leave areas; old seral retention and representativeness; landscape connectivity; stand structure; species composition. Application of these objectives can result in land use zonation and prescriptions in OGMAs and FENs. It is expected that the coarse filter will not suffice alone, because (a) some species have very site specific habitat needs, and (b) current management may deviate from natural disturbance in the resultant landscape values for the six characteristics. Through the fine filter, some of these problems can be addressed using specific land use prescriptions (e.g. Wildlife Habitat Areas (WHAs) under the Identified Wildlife Management Strategy (IWMS); RMA prescriptions).

The most productive approach to the issue would be the application of Landscape Unit planning under the Biodiversity Guidebook, and this strategy is built around providing the most useful tools for this application. (The same strategy, in whole or part, could be applied to existing land use zonation and prescriptions.) Landscape Unit planning requires computer modelling software with ability to make projections of future values for the six characteristics, based on well documented patterns of the parameter values under disturbance regimes. Four of the six (seral distribution, old seral retention, stand structure, and species composition) are ecological and best predicted, and therefore projected, on the basis of ecosystem (site series). So, the data and models should ideally be derived from an ecosystem (site series) mapping. In practice, biodiversity conservation is traded-off with timber harvesting in land use planning, so the modeling environment should have the ability to project timber volume and harvest (growth and yield; silvicultural prescription) from a site series map base.

The most productive approach to this issue involves the following steps that should be applied together, not necessarily in sequence:

Compile existing information presenting reasonable parameter values for each of the six characteristics, and outline additional data gathering required to establish parameter values with useful accuracy and precision.

Establish computer modeling tools that can integrate ecological parameters with timber harvesting parameters

Establish monitoring protocols that track key parameters (e.g., aspects of the six characteristics, or other related parameters) derived from the landscape unit objectives.

What knowledge, analytical methods, or tools are required to address the issue?

Knowledge: Mean, variation and range for parameter values and/or indices that best describe each of the six Biodiversity Guidebook characteristics.

Methods and Tools: Modelling systems that work spatially, and at various scales, with concurrent projections of the key elements of biodiversity and timber supply (e.g., including site series related timber supply, stand structural attributes in successional pathways, natural disturbance regime profiles).

Monitoring protocols involving specific indicator variables or processes of coarse filter and fine filter application.

What is the existing status of the knowledge, methods or tools?

Existing knowledge, method and tools are summarized in the attached Table.

How can inadequacies or inefficiencies in existing information, methods or tools be rectified?

Approaches for dealing with inadequacies in existing information and tools are addressed in the attached Table.

What new information, methods or tools are needed?

New information and tools are presented in the attached Table. These include various Workshops needed to integrate the expertise of MoF, MELP, licensee and private sector experts in coming to agreement on key tools and methods, prioritizing data gaps, and designing modeling protocols. There are a few field inventories that ideally should be undertaken, and the strategy depends on Regional Predictive Ecosystem Mapping (PEM), which is an integration of existing inventories for the most part.

What are some possible projects? (Provide the unique Project Number for those Projects submitted for investment in the Project Summary Table)

Potential projects are listed in italics in the New Information and Tools column of the attached Table.

A few of these are listed in the Regional Project Summary Table (Re1.21 A, B and C)

The strategy requires Region-wide PEM, but PEM projects are left to the District tables

Related District Issues: Mo1, Mo2, Mo3, Mo5, Mo6, Mo8, Mo14, Mo16, Bu3, Bu7, Bu2, Ca11, Ki2, Ki6, Ka8, Ka12, NC2, Nc8, NC12, NC18.

Table: Issue 1.21--Summary of Existing Information and Tools, their Inadequacies, and the New Information and Tools.

Biodiversity Coarse Filter Characteristics & Fine Filter Prescriptions	EXISTING DATA & TOOLS	ADDRESSING INADEQUACIES & INEFFICIENCIES	NEW INFORMATION & TOOLS
Coarse Filter:			
Comprehensive for all 6 characteristics	• Forest Cover / VRI • Some Ecosystem Mapping • Some SIBEC data linking timber productivity to site series	• Lack of ecosystem mapping for much of the PRFR • Implement existing plan to improve SIBEC data for those relationships with low to moderate reliability • Lack of a modeling environment that integrates spatial elements of biodiversity with timber supply variables	• *Predictive Ecosystem Mapping for all BEC zones in PRFR* • *Implement plan to improve reliability of SIBEC data base* • *Workshop on Landscape level models, and choice of those with best functionality in terms of integrating biodiversity and timber supply parameters*
Seral Stage Distribution	• Forest Cover / VRI • Some seral pathway data for assessing likely historical patterns	• Insufficient data or poorly documented data on successional pathways in some BEC subzones (i.e. projections for attributes other than those in growth and yield relationships, and for longer than economic rotations)	• *Workshop on successional pathways to identify data gaps/ data compilation opportunities and prioritize approaches to filling the gaps. Focus on habitat attributes that are not modeled in growth and yield curves*
Distribution of Cut and Leave Areas (Temporal and Spatial)	• Forest Cover / FDPs / SPs • Landscape level Projection Models (e.g., SELES, TELSA, PROGNOSIS) • Management Unit level models (e.g., Atlas/Simfor, McGregor model, Woodstock/Stanley)	• Uncertainty as to adequate models for application in PRFR • Need for choice of hiearchical modeling structure, working at various scales	• *Workshop on Landscape and Management Unit level models, and choice of those with best functionality (see above)*
Old Seral Retention & Representation	• Forest Cover / VRI • Old Seral attribute measures in some portions of the PRFR	• Insufficient data or poorly documented data on successional pathways in some BEC subzones (Age is an insufficient measure of various mature and old seral stand attributes • Fill in gaps in descriptions and attributes of old seral in various subzones by site series	• *Workshop on successional pathways (as per Seral Distribution above)* • *Combine PEM coverage with either VRI or other field measures of old seral habitat attributes by site series as a basis for habitat supply modeling* • *Old Seral Inventory – VRI with additional ground truth sampling to describe range of attributes by SS*
Landscape Connectivity	• Forest Cover / VRI / some site series mapping / some animal distribution and movement data	• Lack data for some BEC subzones on degree of connectivity under natural disturbance regime NDT3 ? • Lack mapping of current prime movement corridors for wildlife • Lack modelling tool to	• *Field inventory of principal movement corridors (game trail mapping; migratory bird surveys), using Traditional Ecological Knowledge(TEK) to stratify effort* • *Workshop on fire*

Biodiversity Coarse Filter Characteristics & Fine Filter Prescriptions	EXISTING DATA & TOOLS	ADDRESSING INADEQUACIES & INEFFICIENCIES	NEW INFORMATION & TOOLS
		evaluate / implement dynamic landscape connectivity	*history data gaps,* • *Review fire history data to assess connectivity in NDT3 (Data compilation & analysis)* • *Workshop on Landscape & Management Unit level models, & choice of those with best functionality (see above)*
Stand Structure	• Some VRI • Some licensee and other literature on stand structural attributes by site series	• Assess sufficiency of existing Forest inventories (e.g., forest structure, VRI) in mapping stand structural attributes, and develop plan and strategy to inventory outstanding areas by site series	• *Workshop to review sufficiency of existing inventories and data, and develop strategy*
Species Composition	• Forest Cover / VRI / SPs • Various ecosystem and G &Y plots	• Insufficient data or poorly documented data on successional pathways in some BEC subzones (habitat supply models need projections of deciduous & mixed-wood forest succession, pathways with mixed canopy composition, & changes in sp compositn over time frames longer than economic rotations)	• *Workshop on successional pathways to identify data gaps/ data compilation opportunities, and prioritize approaches to filling the gaps*
Fine Filter			
Riparian Management Areas	• Stream classification to document location and extent of various stream classes through many chart areas • Some existing prescriptions for certain BEC subzones	• Incomplete classification of some chart areas • Uncertain validity of some classifications (see Issue 3.11 & 3.13) • Incomplete assessment of riparian habitat needs of semi-aquatic mammals (beaver, river otter, mink)	• *Complete stream classifications* • *Systematic checking of inferred classification procedures (as per other Issues)* • *Field inventory to document riparian habitat selection by river otters & mink for latrines and haul-outs, and recommend stand level prescriptions*
Lakeshore Management Areas	• Lake classification system under the FPC	• Incomplete assessment of riparian habitat needs of semi-aquatic mammals (beaver, river otter, mink)	• *Field inventory to document riparian habitat selection by river otters and mink for latrines and haul-outs and recommend stand level prescriptions*
Wildlife Habitat Areas	• Identified Wildlife Management Strategy of the FPC • Some inventory data on critical habitats for Identified Wildlife Species	• Incomplete inventory data on critical habitat locations for Identified Wildlife	• *Field inventory for:* - *Sandhill Crane nesting and foraging wetlands (NC)* - *Mountain Goat natal areas, licks & winter range (NC, Ka, Ki, Mo, La, Ca)* - *Tailed frog natal streams (NC, Ka)* - *Trumpeter Swan nesting areas (Ca)* - *Marbled murrelet nesting areas (NC, Ka)* - *Northern Goshawk nesting areas (all districts)*

Biodiversity Coarse Filter Characteristics & Fine Filter Prescriptions	EXISTING DATA & TOOLS	ADDRESSING INADEQUACIES & INEFFICIENCIES	NEW INFORMATION & TOOLS
Monitoring Procedures			
Monitoring Protocols for the Six Biodiversity Characteristics	• Some ongoing monitoring of G&Y plots by gov't • Some monitoring protocols in place through licensees • Ongoing updates to FC / VRI and other inventories	• Lack of formalized monitoring protocols agreed to by various gov't agencies and licensees	• *Workshops to assess monitoring needs and possible protocols for various of the biodiversity guidebook characteristics*

Issue Reference #: 1.22

Title: TIMBER HARVESTING OPPORTUNITIES WITHIN CRITICAL & SENSITIVE HABITATS.

Description of Issue:

Critical or sensitive habitats for wildlife come with various timber harvesting preclusions, or restrictions, depending on the actual classification of the habitat under Higher Level Plans, Landscape Unit Plans or the Guidebooks and Operational Regulations of the Forest Practices Code. Some habitats can have no timber harvesting (e.g., Riparian Reserve Zones). Many others may have restrictions on timber harvesting (e.g., Riparian Management Areas, some Wildlife Habitat Areas, Key Forested Caribou Habitat polygons of the Telkwa Caribou Recovery Area). However, these restrictions on timber harvesting are often quite general, vague, and not often backed up by adequate science. This issue addresses the uncertainty and lack of specificity in the timber harvesting restrictions. The problem has to be addressed both from the point of view of providing the necessary and sufficient science to develop harvesting prescriptions that will ensure conservation, as well as from the point of view of providing certainty around timber harvesting opportunities.

From the biodiversity conservation point of view, the Strategy statements for Issues 1.21, and 1.23 provide a first, and fairly comprehensive, set of approaches. Implementing many of the project ideas in those strategies will allow a clarification of timber harvesting opportunities within a context of better conservation than otherwise available. This is particularly true for timber harvesting opportunities in the Riparian Management Areas. This Strategy statement deals with some particular issues around Wildlife Habitat Areas, and Ungulate Winter Range (e.g., Telkwa Caribou Recovery Area).

What knowledge, analytical methods, or tools are required to address the issue?

Wildlife Habitat Areas--The key information gap is whether or not the silvicultural and harvesting prescriptions presented in the Identified Wildlife Management Strategy for Identified Wildlife Species are indeed sufficient and necessary in order to conserve the life history requisite that the critical or sensitive habitat is used for. This can best be determined by true Adaptive Management operational trials, with a long-term BACI design (Before-After-Control – Impact), with certain Impact treatments exceeding the IWMS prescriptions.

Ungulate Winter Range--Assessment of timber harvesting opportunities in Ungulate Winter Ranges depends on (a) more thorough definition of those Winter Ranges, (b) true Adaptive Management operational trials with operational harvesting and silviculture in a BACI design, with a variety of Impact treatment (i.e. timber harvesting) intensities.

What is the existing status of the knowledge, methods or tools?

Wildlife Habitat Areas--Given the diversity of Identified Wildlife species, this Strategy cannot summarize all known information. The general guidelines in the IWMS are built on some literature and practical experience, and the quality of this information would have to be reviewed for each species in the context of the Forest District with the species. There is some substantial knowledge of Northern Goshawk nesting area and post-fledging area use in the Kispiox, Lakes and Morice FDs. This suggests that the prescriptions in the IWMS may be too restrictive, and that there may be more opportunities for forest harvesting. There is an ongoing Adaptive Management project addressing this issue in the PRFR, and this project needs to be continued.

Ungulate Winter Ranges--There is an extensive literature on winter range use and requirements for mule deer, moose, caribou and mountain goats, some of which applies directly to the PRFR. This cannot be summarized quickly here. However, the existing operational trials and literature point out potential silvicultural prescriptions that are likely necessary to conserve the quality of the winter range or even enhance that quality. This is true for caribou, a species with very extensive winter range that covers a large proportion of the harvestable land base.

How can inadequacies or inefficiencies in existing information, methods or tools be rectified?

Wildlife Habitat Areas--Undertake true Adaptive Management operational trials, with a long-term

BACI design (Before-After-Control – Impact), with certain Impact treatments exceeding the IWMS prescriptions, and other treatments being more restrictive than the IWMS prescriptions, so as to identify likely impact thresholds. Full fledged BACI design may not be possible when timber harvesting has already affected part of a Wildlife Habitat Area, but strong inference regarding Impact responses can be made from monitoring such situations.

Ungulate Winter Range--This requires better definitions and mapping of existing winter ranges, especially for moose and mule deer (see Issue 2.21). This also requires true Adaptive Management operational trials with operational harvesting and silviculture in a BACI design and a variety of Impact treatment (i.e. timber harvesting) intensities.

What new information, methods or tools are needed?

Wildlife Habitat Areas--Application of operational Adaptive Management trials with forest harvesting designed to address the following limitations:
Northern Goshawk nest area (size limit for no harvesting) and post-fledging areas (extent and type of harvesting system) as defined in the IWMS (Ki, Mo, La, Ka, NC).
Tailed Frogs natal streams – partial harvesting systems in stream buffers – width of no-harvesting core, and extent of canopy and understorey removal with partial harvesting (NC, Ka).
Marbled Murrelets – WHA minimum size requirements, potential to enhance nesting habitat with some partial harvesting (NC, Ka).
Sandhill Crane – WHA forest buffer width around nesting wetlands, and partial harvesting prescriptions in buffers (NC)

Ungulate Winter Ranges---Better definitions and mapping of existing winter range for moose and mule deer using existing information (see Issue 2.21).

Application of operational Adaptive Management trials with forest harvesting designed to address the following questions:
Mountain Caribou – Telkwa herd – can partial timber harvesting maintain or improve arboreal lichen abundance and availability for caribou, and with what harvesting prescriptions?
Mountain Caribou – Tweedsmuir herd – can partial timber harvesting maintain or improve terrestrial lichen abundance and availability for caribou, and with what harvesting prescriptions?

What are some possible projects? (Provide the unique Project Number for those Projects submitted for investment in the Project Summary Table)

Possible projects include those listed under point 4, "New information needs", above. None is listed in the Regional Project Summary Table. Some are included in the District Project Summary Tables (see below).

Within the Wildlife Habitat Area listings, priority projects are Northern Goshawk nesting and post-fledging areas in the Ki, Mo and La FDs (Ki6), followed by Marbled Murrelet nest habitat experiments in the NC, and Tailed Frog stream buffer systems in the NC and Ka. Sandhill cranes are a lower priority, mainly because there is no good inventory of their nesting wetlands (see Issue 2.21)

Within the ungulate winter range, the priority is for trials with the Telkwa caribou (Bu15), as there are existing restrictions on timber harvesting in the Key Forested Caribou Habitat polygons, that need to be addressed.

Issue Reference #: 1.23 & 3.11

Title: MANAGING RIPARIAN HARVESTING & CROSSING OF S4, S5 & S6 STREAMS TO PROTECT & CONSERVE THEIR RESOURCE VALUES

Description of Issue:

The Forest Practices Code Riparian Management Area Guidebook specifies that S4 (fish-bearing, <1.5 m wide), S5 and S6 (non fish-bearing) streams will not need a Riparian Reserve Zone (area of no timber harvesting), but will have Riparian Management Zones (RMZs) of 30, 30 and 20 m width respectively. The Guidebook outlines best management practices for timber harvesting activities within those RMZs. This issue revolves around whether or not those "best management practices" adequately allow for protection and conservation of non-timber resource values associated with the streams, particularly fish resources in S4 streams and downstream of all these stream types, water quality and quantity issues, and use of riparian habitats by wildlife that are dependent on the stream itself (e.g., semi-aquatic mammals, tailed frog).

Even with detailed knowledge, this issue will ultimately be resolved through trade-offs in resource values. Natural disturbance regimes in fire driven ecosystems would have resulted in a wide range of riparian plant communities over time, changing at scales at least as large as current cutblocks. Some of these changes (e.g., removal of canopy trees by fire) may have been detrimental to water quality (e.g., temperature) and fish while being advantageous to beaver, which colonize young seral stands. Rigid harvesting prescriptions in the RMZ will necessarily preclude some resource options in this kind of ecosystem. In ecosystems where natural disturbances are rarely stand initiating (at the scale of a cut-block), it is more likely that intensive timber harvesting in the riparian zone will be detrimental to a larger, or complete, suite of resource types.

What knowledge, analytical methods, or tools are required to address the issue?

This issue requires the following knowledge:

- Accurate stream classification of all streams
- Quantification of the spatial and temporal extent of stand types (mature tree density; understorey density) resulting from existing harvesting prescriptions in RMZs, and comparison to the spatial and temporal extent of stand types in RMZs resulting from stand initiating natural disturbance types (NDTs as per the biodiversity guidebook).
- Quantification of the effects of a range of timber harvesting prescriptions, and guidelines for road crossings, in the RMZ on water quality and flow regimes, and fish age class composition, distribution and survival. This requires monitoring adjacent to, and downstream of, stands with harvesting.
- Quantification of the stand or within-stand habitat attributes associated with habitat use by semi-aquatic mammals (river otter, mink and beaver) and amphibians (tailed frog) on these stream types.

An attempt to address the issue should stratify the forest land base under consideration into various natural disturbance types (NDTs as per the Biodiversity Guidebook of the FPC) because ecosystem management would allow for more frequent and extensive natural disturbances, or their closest timber harvesting equivalent, in riparian zones in some NDTs, and much less frequent in others (see second bullet above)

What is the existing status of the knowledge, methods or tools?

There is a lot of information on this issue in the scientific literature, in various consultant reports and workshop proceedings. The need to resolve this issue has been the subject of recent government documents:

- Timing windows and Measures for the Conservation of Fish , Fish Habitat and Water quality. MELP Habitat Branch, Habitat Protection Section March 10, 2000
- March 2000 letters from DFO Area Chiefs to MOF District Managers Re: Fisheries Act

implications of logging adjacent to small streams.

- The No Net Loss of Fish Habitat: An Audit of Forest Road Crossings of Fish-Bearing Streams in British Columbia, 1996-1999". 2000. D. Harper and J.Quigley. Canadian Manuscript Report of Fisheries and Aquatic Sciences.

For existing information, there is no obvious summary, apart from the format that can help forest managers make decisions in varying ecosystem types (natural disturbance regimes). Such a summary is desirable, and would best be presented in conjunction with spatially and temporally explicit modelling of the range of stand and landscape changes likely in the RMZs under natural disturbance regimes and under timber harvesting with current prescriptions.

There are information gaps, and these would better come to light with a summary of the existing information. There are definite gaps in the knowledge of stand level and within-stand level use of riparian habitats by the semi-aquatic wildlife, and tailed frog, in PRFR.

How can inadequacies or inefficiencies in existing information, methods or tools be rectified?

Undertake a Summary review and analysis of existing information pertaining to the PRFR, including GIS modeling of the likely riparian stand types with spatial and temporal distribution, in various NDTs. The goals of this document would be to give best direction on RMZ harvesting practices based on current knowledge, outline data gaps that need to be filled, and provide some direction as to where and how to proceed with filling those gaps through adaptive management trials (3rd point below). This may require development of a novel modeling tool in GIS, and the collection of new information on the effect of natural disturbances in riparian zones to parameterize the model.

Disseminate the results of such a summary widely to forest practitioners within the PRFR and beyond, through workshops, demonstrations and seminars.

What new information, methods or tools are needed?

Develop a new modeling tool, or modify existing tools, if necessary, to adequately track and project riparian stand types through time.

Where more detailed data are required to parameterize a model, collect new field data on successional pathways in riparian areas, and changes in forest stand structure and composition in riparian zones under natural disturbances as compared to timber harvesting.

Design and implement an adaptive management project, ideally with a BACI (Before-After-Control-Impact) design, to address the data gaps in point C above, and those outlined by the Summary Review and Analysis. This would include:

- Using the model outputs in a series of riparian harvesting / silviculture trials within RMZs, which mimic natural disturbance conditions, and also apply some conditions in excess of natural disturbance impacts.
- Monitor the effects of these riparian harvesting / silviculture trials on aquatic ecosystems, and compare with natural conditions in control streams.
- Choose among silvicultural treatments for fine tuning existing harvesting guidelines, based on monitoring results.

Collect new field inventory information on the within stand riparian habitat selection by mink and river otter, and on the movements by tailed frogs in riparian forests.

These do not need to be done in sequence.

What are some possible projects? (Provide the unique Project Number for those Projects submitted for investment in the Project Summary Table)

The first and second points above can be dealt with as part of workshops proposed under Strategy 1.21 for Landscape Modelling, and for Succesional Pathways (i.e. Re1.21 – A, Re1.21 – B). Re1.23 – A: Implement an adaptive management project. This is likely a research endeavour.(This is related to District Issues: Mo12, Mo17, Bu4, Bu5, Bu11, Ki3, Ki5, NC4, NC16). Re1.23 – B: Riparian habitat selection by semi-aquatic mammals. (This is related to District Issues: Mo14, Mo17, Ki5, NC4, NC16)

Issue Reference #: 1.24

Title: UNGULATE WINTER RANGE

Description of Issues:

The Forest Practices Code (section 69) mandates that BC Environment provide data on Winter Range that is critical to the survival of ungulate populations, in order that such Range be considered for inclusion in Sensitive Area designation with complete or partial removal from the harvestable land base. The Ministry of Environment has not been able to provide all the necessary information to decide on such Range designations to date, but has agreed to provide the necessary information by 2003, after which such Range may no longer be eligible for exclusion from the harvestable land base. There is an urgent need to gather the existing information for ungulate populations.

Certain Higher Level Plans (e.g., LRMPs) require designation of such Ungulate Winter Range as part of the process of sustaining ungulate populations within the planning area.

What knowledge, analytical methods, or tools are required to address the issue?

This issue requires knowledge of:

(i) Existing distribution of ungulates (i.e. moose, caribou, mule deer, white-tailed deer, elk, thinhorn sheep and mountain goat) in winter.

(ii) Quantification of the habitat parameters those ungulates are selecting for in choosing existing winter range so that mapping of winter range capability can proceed, and so that capability and suitability mapping can be extrapolated to areas where existing inventory information on winter distributions (point (i) above) is lacking.

(iii) Decisions as to what constitutes critical winter range for sustaining a population.

(iv) Development of the appropriate winter range capability and suitability mapping.

(v) Making this winter range information known to all involved.

What is the existing status of the knowledge, methods or tools?

This synopsis follows the points above:

(i) Existing winter distributions are fairly well documented for moose, elk, caribou, and thinhorn sheep in Skeena Region. However, data on mountain goat and mule deer are poor.

(ii) There has been little effort put towards quantifying the habitat parameters selected by ungulates in winter (i.e. detailed studies involving statistical testing of selection). Caribou have had the most detailed work. However, there is substantial natural history knowledge, and data on winter distributions of moose, caribou and some goat populations, all of which could be used, at a coarse scale, to develop some better quantification of habitat selection, and provide the basis for habitat ratings tables.

(iii) There are few data available to address what constitutes critical range, in the sense of range that, if removed, would result in a substantial population decline. This is ultimately not a scientific question (e.g., defining a substantial decline), though scientific methods are needed to inform the decision.

(iv) There is already some winter range capability and suitability mapping available. The models driving this mapping will have to be reviewed in the light of new information from gaps identified above.

(v) Existing winter range mapping is fairly well known, but there will have to be a more concerted effort to get new information and mapping known by all licensees, and Ministry of Forests and Environment staff.

How can inadequacies or inefficiencies in existing information, methods or tools be rectified?

(i) Existing winter distributions have to be documented differently for different species. Aerial census and counts can be sufficient for moose, goats and thinhorn sheep. Telemetry is virtually necessary for mule deer and caribou. There are insufficient resources to apply either method comprehensively across the whole Region for all species. Therefore, a solution must depend on using existing distribution information, summarizing the associated habitat use or selection parameters (as per point (ii) below), then developing the winter range suitability and capability mapping which extrapolates geographically across wider areas. An equally useful approach is to develop suitability maps based on best available information, then validate these maps with one of the methods in (ii) below.

(ii) Measures of habitat selection depend on measures of habitat use compared to habitat available, and therefore primarily need a discrete habitat map layer classified in a meaningful way for the animals. PEM map layers, or some other combination of Forest Cover and TRIM layers, are required for the entire Region.

Winter habitat use can be quantified through (a) radio telemetry (ideally GPS) of discrete populations (e.g., caribou, goats, moose, deer), (b) direct observations of habitat use by a substantial proportion of a wintering population (e.g. goats, moose, thinhorn sheep), (c) snow tracking individuals for considerable periods (e.g., caribou, moose, deer), or (d) pellet counts in spring across all habitats available (e.g., moose, deer, caribou). Such use data should be compared statistically to measures of habitat available to the animals. Habitat availability can be quantified directly from the habitat map layer. Existing data deficiencies could be addressed by (a) directing GPS telemetry studies at benchmark populations, suitable for extrapolation, (b) taking historical survey data on moose and caribou distributions in winter and quantifying habitat selection, (c) undertaking new snow tracking work, or (d) undertaking new pellet count work. Point (b) is the most tractable in the time frame available.

Deciding how best to approach the data gaps within the time available would best be addressed in a Workshop.

(iii) Deciding what is critical range will depend on things like the strength of the quantified habitat selection, how restricted the winter range is compared to the annual range, and perhaps applying demographic data to a Population Viability Analysis to simulate the effect of loss of the winter range.

(iv) Once existing distribution and habitat selection data have been scrutinized closely as in points (i) and (ii), then developing the ratings tables to drive suitability and capability mapping is relatively straightforward.

(v) Circulating maps and products will require a combination of putting the data on a web page and giving workshops.

What new information, methods or tools are needed?

Most of the potential new information needs are outlined above. A Workshop is required to discuss priority areas for novel work, given that only a small portion of it can be done with the resources and time available. Predictive Ecosystem Mapping (PEM) is required for the Region.

Existing data could be used to answer a number of questions, and once again a Workshop is needed to decide on priorities and methods.

No new techniques or methods are required.

What are some possible projects? (Provide the unique Project Number for those Projects submitted for investment in the Project Summary Table)

At the Regional level a Workshop on Priority Setting and Approaches (Re1.24 A)

The following district issues (and associated projects) are directly relevant: Mo10, Bu14, Ca4, Ca12, Ki6, Ka9, Ka18, NC14.

Predictive Ecosystem Mapping is a key step in implementing this work. PEM is an identified project for the following District Issues: Mo8, Bu3, Ka19, NC2.

Issue Reference #: 1.33

Title: HOW CAN WE ACCESS EXISTING INFORMATION AND TECHNOLOGY TRANSFER TO SHARE INFORMATION RESOURCES AS BROADLY AS POSSIBLE AT REASONABLE COST?

Description of Issue:

This issue has several components. They include, but are not limited to:

- What existing information exists, in what form and where is it located?
- Who "owns" the information and how can the cost of acquisition be best reconciled?
- How best can we disseminate this knowledge?
- How do we promote open access to information while government still has a "cost recovery" policy for certain baseline data e.g. TRIM
- What are the strategies we can undertake with short term results?
- What are the strategies we can support with longer term results?
- What is within the scope of a regional project vs. provincial?
- We must recognize the value of best available information even if it does not meet current "standards".

What knowledge, analytical methods, or tools are required to address the issue?

Need to know what data exists specific to this region:

- Establish regional data sharing consortium consisting of all those who collect and manage data.
- Establish access to all existing data "hubs".
- Complete an "inventory of inventories" using contracting dollars (talk to SIFERP).
- Establish a web site for access to information.
- Link the Consortium's activities to provincial initiatives via ministry and licensee association rep.

What is the existing status of the knowledge, methods or tools?

- North West Data Centre co-operative data warehouse for spatial and attribute data in PRFR and Skeena MELP region.
- North West Data Centre and Canfor (Houston) cooperative data sharing project (Barry Watson and Don Morgan)
- Research RMP through Southern Interior Forest Research Partnership (SIFERP)(Chris Hollstedt leading);
- IFPA (Lakes-Morice) have raised this issue and may be developing some strategies For the IFPA which build on the Canfor NW Data Centre initiative ;
- Framework Inventory Program (MoF & MELP). Funding is scheduled to end March 31, 2001 - Janet Gagne (FRBC) – this needs more research;
- National Forest Information System (contact Dave Gilbert)
- Forest Information Update web page (http://home.att.net/~gklund/)
- Access to MoF information through the Internet: challenges include - TRIM base maps, access to our compiled sample data both G&Y as well as VRI, coupling to our hardcopy map supplier (contact Dave Gilbert);
- MELP & MoF data sharing via INCOSADA (long term??);
- LRMP data – supports LRMP implementation/monitoring - Don Howes of LUCO;
- BC Fisheries project registry (http://www.canbcfpr.pac.dfo-mpo.gc.ca/fpr/Qf_Welcome_dev.asp);
- Kalum Forest District Inventory of Inventories Access database – needs work to be useful
- SIFERP Natural Resources Information network (http://home.att.net/~gklund/)

How can inadequacies or inefficiencies in existing information, methods or tools be rectified?

Set up project to do all of those items in box above (what is required). Funding is needed to

make this happen.
What new information, methods or tools are needed?
What are some possible projects? Regional: Re1.33 – A: Data Sharing Network Re1.33 – B: Inventory of inventories Related District Issues: Mo9 (Accessing growth and yield), Mo18 (District data model), Mo22 (District web page), Ka1 (District data sharing), Ka24 (Data warehousing).

Issue Reference #: 2.11

Title: HOW PRODUCTIVE ARE MANAGED STANDS IN THE DIFFERENT ECOSYSTEMS OF THE PRINCE RUPERT FOREST REGION?

Description of Issue:

There is increasing pressure on the land base available for timber production. There is also a desire to use partial cutting systems for objectives other than timber production in areas that are within the timber producing land base. It is therefore imperative that the productivity of sites that are available for timber production are modelled in the most accurate way possible. Errors in the estimation of productivity may have significant effects on the decisions made around allowable cuts and land use that will prove hard or impossible to reverse in the future.

Partial cutting systems are increasingly being used for various reasons related to the Forest Practices Code and Land Use Management decisions.

Land use decisions must be made on an informed basis so that the balance of one use against another is clear.

What knowledge, analytical methods, or tools are required to address the issue?

Better information is required to accurately predict the potential productivity of every stand in the province. In addition, we need more information on the realized or "actual" productivity (how stands actually grow) given the site productivity and the new "complex" stand structure being developed by partial cutting and/or alternative silvicultural systems in general. A number of tools exist to predict potential and actual site productivity of single storied, single aged stands. As we move into a future of diversity and alternative harvesting to satisfy less-economical forest management we have to better understand the implications on the growth rates of forest stands.

Better education of the forestry community and public at large of the difference between the potential productivity of forest lands and the represented productivity (how trees actually grow).

All land management decision that impact forestry operations require this information. Many people do not fully comprehend the impacts on tree growth of various alternative silvicultural systems. For instance if a land use decision is made that eliminates clearcutting all together the public must understand the implications this decision. Some impacts might be; the disturbance of the natural state of some stands (i.e. pure lodgepole pine stands), slower stand growth rates caused by limiting light to under story, impacts on other native shrub and herbaceous species.

More information is needed that allows better estimates of potential and realized productivity to better define the productive forest. Once collected the information must be disseminated to land use planning tables to allow better and more informed land use decisions.

What is the existing status of the knowledge, methods or tools?

There currently exists a fair bit of knowledge, methods & tools on our "current" managed stands. Knowledge gaps still exist, however, in a few areas. Efforts to fill these knowledge gaps should remain a high priority.

The biggest need for information is on our understanding the productivity of our "future" managed stands. For instance, moving away from clear cutting as a silvicultural system will have impacts on the realized productivity of our managed stands. We need to understand and quantify these impacts for better and more informed land use decision making.

Information, methods or tools needed are identified in the Forest Productivity Council's, Site Productivity Working Group 5 yr plan. The plan is on the internet at http://www.for.gov.bc.ca/resinv/G&Y/Projects/spwg/fiveyr.htm. Financial support for this plan is needed.

The Site Productivity Working Group (SPWG)was formed in 1993 in response to a recognized need for improved information & tools for estimating site index & the productivity of commercial forest sites in BC. The working group is comprised of experts from industry, academia and the MoF. The SPWG sets out a five-year plan of action recognizing that:

- estimates of growth & yield are key to determining allowable annual cut (AAC) and that AAC is inextricably linked to forest jobs and community stability.
- investment decisions in silviculture must be based on knowledge of the outcome of those investments.
- new, more accurate estimates of site productivity are expected to mitigate downward pressures on AAC in many areas of the province.
- BC cannot afford to duplicate research efforts in industry, academia or government. Co-operative programs, such as those undertaken through the SPWG, can best meet the needs of all forest managers for site index & site productivity tools both effectively & efficiently.

Input from SPWG clients was obtained through in-depth client interviews, regularly scheduled conference calls, & ongoing communications. Combined with the technical expertise of SPWG members, client input was used to generate a list of candidate projects. From this list, priority projects were identified & recommended for funding.

How can inadequacies or inefficiencies in existing information, methods or tools be rectified?

Better long-term funding and support at the Forest Renewal and MoF executive, head quarters and regional levels for projects identified by SPWG.

What new information, methods or tools are needed?

The information, methods or tools needed are identified in the Forest Productivity Council's, Site Productivity Working Group 5 year plan. The plan can be access on the internet at http://www.for.gov.bc.ca/resinv/G&Y/Projects/spwg/fiveyr.htm. Consistent, long-term financial support for this plan is what is needed.

What are some possible projects?

Refer to in the Forest Productivity Council's, Site Productivity Working Group 5 year plan for a detailed list of needed information and projects.

The following district and regional projects also meet the SPWG goals:

Re2.11 A: Remeasurement of Permanent Sample Plots (PSPs) on 10-year cycle.

Other Regional initiatives would include: Coordination of the various District projects; SIBEC sampling (as proposed in Districts); Represented vs. Potential Site Studies; Years to Green-up Studies; Operational Adjustments to Site Index. Predictive Ecosystem Mapping for SIBEC relationships.

District projects are: Mo9 Accessing Growth and Yield Data, Mo20 Silviculture treatments on site productivity, Bu 6 –A SIBEC and SIBEC PEM, Bu12 Blunt Creek Balsam Release trial, Ka 2 site productivity studies, Ka16 Partial cutting strategy, NC3 -C SIBEC study CWH, NC10-J VRI on TFL25.

Issue Reference #: 2.12

Title: HOW PRODUCTIVE ARE MANAGED STANDS USING PARTIAL CUTTING SILVICULTURAL SYSTEMS IN THE DIFFERENT ECOSYSTEMS OF THE PRINCE RUPERT FOREST REGION?

Description of Issue:

Partial cutting systems are increasingly being used for various reasons related to the Forest Practices Code and Land Use Management decisions. These impact site productivity.

What knowledge, analytical methods, or tools are required to address the issue?

Better information is required to accurately predict the potential productivity of every stand in the province. In addition we need more information on the realized or "actual" productivity (how our stands actually grow) given the sites productivity and the new "complex" stand structure being developed by partial cutting and/or alternative silvicultural systems in general. A number of tools exist to predict potential and actual site productivity of single storied, single aged stands. As we move into a future of diversity and alternative harvesting to satisfy less-economical forest management we have to better understand the implications on the growth rates of our forest stands.

What is the existing status of the knowledge, methods or tools?

Limited! A few sporadic studies have only begun to scratch the surface of this very large, very complex issue. The Forest Productivity Council's, SPWG is currently developing a strategic plan that will prioritize efforts that address many of the issues surrounding site productivity impacts of alternative silvicultural systems.

How can inadequacies or inefficiencies in existing information, methods or tools be rectified?

Proper long term funding and support, at the executive, headquarters and regional levels is needed. Once the strategic plan is developed by the SPWG implementation of that plan must be a top priority. Funding should follow that addresses the top priority issues. In order to determine the long-term impacts on productivity of many of the silvicultural practices, we must begin now at studying the effects. Numerous dollars are spent on these alternative systems when very little is know on the productivity impacts of them.

What new information, methods or tools are needed?

Currently being determined by the Forest Productivity Council's, SPWG.

What are some possible projects?

Better site index-site series (SIBEC) estimates; more information on the relationship between varying levels of over story removal and the impacts to under story growth.

Potential projects are lumped with those for Strategy 2.11 (above).

Issue Reference #: 2.21

Title: CONSERVATION OF VIABLE POPULATIONS OF IDENTIFIED AND LISTED WILDLIFE SPECIES.

Description of Issue:

The Forest Practices Code (FPC), with its various Guidebooks, is designed, in concept, to promote conservation of most forest-dwelling species by coarse filter, ecosystem management. Some species, whose habitat use is very restricted spatially or temporally, or which rely on mature forest conditions, require fine filter management, or management focussed specifically at the individual species. The Identified Wildlife Management Strategy (IWMS) of the FPC provides some guidelines for conserving some of these fine filter species (known as Identified Species). Other land use decisions (strategic and operational) can help. The full complement of Identified species has not been finalized, and the list does not include all blue and red listed (i.e. rare and endangered) species that may be candidates for fine filter management.

This issue focuses on the information gaps and tools required to better conserve viable populations of fine filter species given that we still have a considerable lack of information on many of these organisms.

This Issue is closely related to Issue 1.21, so there is some overlap in approach and in detail, but there is a lot of work unique to this Issue.

What knowledge, analytical methods, or tools are required to address the issue?

The Strategy involves the following necessary steps. These do not have to be attained in sequence; in particular points iii and iv can be done together, and information can be drawn from other parts of the Province.

(i) Identification of all pertinent species.

(ii) A demographic assessment of the most vulnerable life history stages of each species in the context of forest development. This includes modeling of the sensitivity to changes in various stages, as well as field inventory of survival and productivity of various life stages.

(iii) An assessment of the species' habitat selection during the vulnerable life history stage, and a quantification of the habitat attributes being selected for. This includes an assessment of possible feedback mechanisms between habitat carrying capacity and demographic performance (i.e. food limitation).

(iv) Inventory of distribution of vulnerable, fine filter species in the Region.

(v) Development of forest management practices that ensure sufficient habitat is maintained without compromising the life history / demographic process in that habitat.

(vi) Extension work to inform forest managers and planners of recent new information and how to apply it. This includes the development of habitat suitability, capability and effectiveness maps, based on a habitat map layer.

What is the existing status of the knowledge, methods or tools?

There is a considerable amount of information available, and most tools (e.g., RIC inventory standards; population viability models) are in place to deliver new work. The following is a quick synopsis:

Identification: The pertinent species have been listed in the IWMS or on the Provincial Red and Blue Lists. These lists drive current priorities. However, the IWMS will produce updated lists in the near future, and additional species will have to be considered (e.g., marten). This Strategy addresses current lists, but the priorities will have to be reviewed periodically.

Vulnerable life history: This can be inferred from existing information on the taxonomy, life history and ecology of the species, and there is often general agreement. However, detailed modelling has not been done in all cases.

Habitat selection: There is some knowledge on habitat use by most of the species, but in many cases this information is too vague to direct forest development. There is a lack of rigorous habitat selection (use vs. availability) work, and there is often poor data on the precise forest habitat attributes being selected by the organisms.

Inventory: The distribution of many of the species is quite well documented, but for some there are still major gaps.

Forest management practices: Appropriate forest development and management practices can often be inferred based on changes in the distribution and abundance of the organism historically, or from the deviation of human disturbance regimes from natural disturbance regimes. There is substantial anecdotal information on affects of forest management on some species, but a lack of rigorous experimental approaches, in an operational setting, designed to find the thresholds for sustainability.

Extension: The amount of information available to forest managers, on this issue, is fairly high. However, much of the recent FRBC inventory information has not been transmitted well to forest managers and planners, in formats that they can readily deal with (e.g., Extension Notes; workshops; seminars). In addition, considerable more effort should go in to presenting existing habitat election and distribution information to planners in the form of habitat suitability and capability maps.

How can inadequacies or inefficiencies in existing information, methods or tools be rectified?

Identification of species: Update the lists periodically

Vulnerable life history: Modelling review of likely most vulnerable life history stages. Much of this is already implicit in the IWMS, but a workshop setting review is required for some species.

Habitat selection: Quantified habitat use vs. availability analyses undertaken as part of an inventory or research investigation into the species. This requires detailed study design and statistical analyses. Can be done in conjunction with inventory of distribution.

Inventory of Distribution: Field inventory searching for presence of the species, and ideally achieving some relative or absolute abundance counts.

Forest Management Practices: Numerous of these are presented in the IWMS for various species. However, it is not clear that these are pertinent or adequate for application in the PRFR, as many have been inferred from other ecosystems. The best approach is a true adaptive management research study involving monitoring of control and treatment samples, ideally with before-after components (BACI design), where treatments are operational scale forest harvesting and development activities. In lieu of such a rigorous design, there should be conscious effort put towards alternative designs, such as repeated inventory work (census or estimates of demographic data) in areas experiencing forest development, or periodic re-assessments of habitat availability.

Extension: More effort in writing up the results of past work in Extension Notes and presenting talks to planners/foresters. The preparation of habitat suitability and capability maps, based on TEM, PEM or some other habitat layer, is an integral part of extension, as this is the most useful way for forest planners to use existing habitat selection and distribution data.

What new information, methods or tools are needed?

New information, methods and tools are outlined for each species in the attached Table, by reference to each of the six steps (i through vi) in the Strategy. Note that this Table only includes those red and blue listed species that are likely to be affected by forest development activities. A number of others are omitted.

What are some possible projects? (Provide the unique Project Number for those Projects submitted for investment in the Project Summary Table)

The italicized items in the attached Table could be considered potential projects. These are not all listed separately here, nor in the Regional Project Summary Table.

Projects are best delivered at the Forest District level, or with cooperation between a few FDs, so are listed in the District Summary Tables.

Potential District Projects are associated with the following District issues:

Mo1, Mo2, Mo3, Mo4, Mo5, Mo6, Mo7, Mo8, Mo10, Mo11, Mo16, Bu2, Bu14, Bu15, Bu17, Ki6, Ki10, Ka8, Ka15, Ka17,Ca5, Ca6, Ca7, NC7, NC8, NC13, NC20, NC21, NC23, NC24, NC25

Table: Issue 2.21: Summary of Needs for New Information and Tools to Better Conserve Identified and Listed Species in the PRFR. Empty cells mean that needs are not high at present. Italicized cells are priority items, that could be considered projects. WHA = Wildlife Habitat Area as per the IWMS; AM = Adaptive Management. Forest Districts are referred to by two-letter code.

IWMS Species:	**VULNERABLE LIFE HISTORY**	**HABITAT SELECTION**	**INVENTORY of DISTRIBUTION**	**FOREST MANAGEMENT PRACTICES**	**EXTENSION**
Tailed Frog	Modelling of tadpole survival in stream & young frog survival on land	*Test model for southern populations with northern inventory data (Ka, NC)*	*More detailed distribution data for adults and tadpoles in Ka, NC*	*AM test of recommended silvicultural practices in WHAs*	
American Bittern	Nesting habitat security from human disturbance	*Assess use vs. availability of wetland types as part of distribution inventory (La, Mo, Bu)*	*Need nesting distribution data for La, Mo and Bu.*		
Sandhill Crane	Nesting habitat security from human disturbance	*Assess use vs. availability of wetland and bog types as part of distribution inventory (NC)*	*Need nesting distribution data for NC.*		
Trumpeter Swan	Nesting habitat security from human disturbance	*Assess use vs. availability of wetland types as part of distribution inventory (Ca,Ka)*	*Need nesting distribution data for Ca, Ka.*		
Northern Goshawk	Modelling of nesting habitat security and landscape foraging habitat availability	Complete nest area habitat selection model development based on current inventory (Ki, Mo, La). Develop model for nest site selection in Ka, NC.	*Complete nest inventory ongoing in Ki, Mo, La.* *Undertake nest inventory for Ka, NC, Ca.*	*Continue implementation of AM project testing WHA prescriptions in Ki, Mo, and La.*	*Develop seminar / workshop to outline AM project, and other silvicultural prescriptions, to FD and licensee planners (Ki, Bu, Mo, La). Finalize preliminary habitat suitability and capability maps based on recent inventory (Ki).*
Ancient Murrelet	Nesting habitat security		*More complete assessment of breeding colony distribution and status (NC)*		
Cassin's Auklet	Nesting habitat security		*More complete assessment of breeding colony distribution and status (NC).*		
Marbled Murrelet	Nest habitat security	*Test existing model(s) of habitat selection with telemetry on adult birds (NC, Ka)*	*Landscape inventory of high use watersheds using radar (NC);*	*AM test of recommended silvicultural practices in WHAs (NC)*	*Develop seminar / workshop to outline recent research and inventory findings, and recommended mgmt practices to FD and licensee planners (NC, Ka). Produce nesting habitat suitability and capability maps based on update inventory info (NC, Ka).*
Keen's Long-	Security of natal roosts,	Assess use vs. availability of	Need data on distribution of this		

Table: Issue 2.21: Summary of Needs for New Information and Tools to Better Conserve Identified and Listed Species in the PRFR. Empty cells mean that needs are not high at present. Italicized cells are priority items, that could be considered projects. WHA = Wildlife Habitat Area as per the IWMS; AM = Adaptive Management. Forest Districts are referred to by two-letter code.

IWMS Species:	**VULNERABLE LIFE HISTORY**	**HABITAT SELECTION**	**INVENTORY of DISTRIBUTION**	**FOREST MANAGEMENT PRACTICES**	**EXTENSION**
eared Myotis	and possible hibernacula	various forested habitats for roosting and foraging based on telemetry (NC, Ka)	species (and other bats) on mainland PRFR (NC, Ka)		
Fisher	Modelling relative impacts of natal den security and food limitation	*Assess use vs. availability of various forested habitats based on relative abundance inventory data (Ka, Ki, Bu, Mo, La, Ca)*	*Need relative abundance data on distribution of the species in various parts of the PRFR (track counts) (Ka, Ki, Bu, Mo, La, Ca)*		
Grizzly Bear		*Field validation of existing habitat suitability mapping (Ki, Mo)*		*AM landscape scale test of effectiveness of access management on GB habitat use (Bu, Ki, Mo, Ca)*	*Develop habitat capability, suitability and effectiveness mapping (1:20,000) for all planning areas (priority on Ki, northern Ka, La)*
Mountain Goat	Modelling relative impacts of snow depth and duration, vs. juvenile and adult survival on viability	*Field validation of existing habitat suitability mapping, esp. of winter habitat (Ki, Ka); Quantify forest habitat selection by non-alpine resident goat populations using GPS telemetry (Mo, La)*		*AM test of the effectiveness of access management on goat use of forested habitats (Mo)*	*Develop habitat suitability and capability mapping (1:20,000) for all planning areas (priority on Bu, northern Ka, Ca)*
Red & Blue List Species (not in IWMS)					
Red & Blue listed Plant Communities	Ecosystem integrity due to eradication and fragmentation of mature forest		*Need to find out where these communities are, and describe them (priority on Skeena bottomland and estuaries in Ka,, NC ,Ki, Mo).*		*Integrate findings into LRMP processes.*
Great-blue Heron	Nest area security		*Field inventory of nest sites (NC).*		
Surf Scoter	Nest area security		Field inventory for potential nesting areas (Ca).		
Swainson's Hawk	Nest area security		Field inventory of nest sites (La, Mo, Bu, Ki)		
Gyrfalcon	Nest area security		Field inventory of nest sites (Ca)		
Sharp-tailed Grouse	Lek and nesting habitat security		Field inventory of leks and nests (La)		
Short-eared Owl	Nest site security	*Nest site use vs. availability based on nest site inventory and habitat mapping (La)*	*Inventory of nests to determine chronology and breeding success, esp. with respect to range activities (La)*		

Table: Issue 2.21: Summary of Needs for New Information and Tools to Better Conserve Identified and Listed Species in the PRFR. Empty cells mean that needs are not high at present. Italicized cells are priority items, that could be considered projects. WHA = Wildlife Habitat Area as per the IWMS; AM = Adaptive Management. Forest Districts are referred to by two-letter code.

IWMS Species:	**VULNERABLE LIFE HISTORY**	**HABITAT SELECTION**	**INVENTORY of DISTRIBUTION**	**FOREST MANAGEMENT PRACTICES**	**EXTENSION**
	Security of natal roosts, and possible hibernacula	*Assess use vs. availability of various forested habitats for roosting and foraging based on telemetry (NC, Ka, Ki, Bu)*	*Need data on distribution of this species (and other bats) on mainland PRFR (NC, Ka, Ki, Bu)*		
	Security of natal denning and rearing areas from human disturbance, and integrity of wolf-ungulate systems				*Develop habitat suitability mapping for wolverine natal denning and rearing areas (Mo, Bu, Ki)*
Mountain caribou (s. part of PRFR)	*Uncertainty as to the role of food limitation for pregnant females affecting calf viability vs. predation limitation in population declines (Need for field inventory work and modeling)*	*Habitat selection (use vs. availability) using GPS collars and a detailed habitat map(Bu, Mo, La, Ca);* *Investigation of the feedback of habitat carrying capacity on body condition (Bu, Mo, La, Ca)*			*Seminars / workshops to address recent information and present it in the light of forest planning (La, Mo, Bu)*
Bull Trout	Adults in summer holding areas (overfishing); Spawning areas		*Complete overview and recce inventories (Ca, Ka, Mo, Ki);* *Initiate species specific detailed inventory for documented distribution (Mo,Ki)*		

Issue Reference #: 3.12

Title: WHAT ARE THE BEST MANAGEMENT PRACTICES FOR OPERATIONS ON STEEP SLOPES WITH RESPECT TO CONSERVING WATER QUALITY AND QUANTITY, SLOPE STABILITY AND PRODUCTIVE LAND BASE?

Description of Issue:

Hillslope failures constitute the dominant geomorphic process in steep mountain landscapes. The failure processes described as debris slides-avalanches-flows-torrents occur during large magnitude storms. During big storms most of the geomorphic work in watershed takes place—debris/sediment transported and stream channel changes. Hillslope failure rates are increased by forest harvesting activities of road building and harvesting. Forest workers are placed at risk with operation down slope or on potentially unstable terrain. Slope failure result in the potential loss or destruction of forest site productivity, water quality and stream habitat. It is possible to manage forest land and substantially reduce the likelihood of landslides by recognizing and avoiding unstable terrain, using appropriate harvesting systems and carefully designing, constructing and maintaining roads. Effects on water quality due to forest harvesting have to take into account "baseline" effects of natural geomorphic processes.

Fans (cones, colluvial fans and alluvial fans) can be active geomorphic features due to floods, debris flows, hyperconcentrated flows and channel avulsions. The effects of these hydrogeomorphic processes can be aggravated by forest management activities. Throughout the PRFR there are examples of forestry related impacts on fans to fish habitat, forest plantations and forest roads. Currently there is very little scientific information regarding fans and there is no compendium of forest management experience on fans. FPC does not address fans. Terrain stability and surface erosion hazard mapping systems do not highlight hazards on fans.

What knowledge, analytical methods, or tools are required to address the issue?

Knowledge is required in term of the recognition and understanding of the internal and external factors that control and determine slope stability and how contributing factors are linked to forest management practices. The recognition of unstable terrain (describing and characterizing) is necessary to develop and refine mapping methodology and to identify field indicators of slope instability.

Qualitative and quantitative analytical methods need to be developed or refined that will enhance the input of slope stability hazard and risk information into forest planning. Methods and tools need to be presented in guidebooks for field recognition of unstable sites and methods of ameliorating affects of forest practices on unstable terrain.

What is the existing status of the knowledge, methods or tools?

Landslide research, in the 1980s, established that hillslope failures were a problem related to harvesting and road building. At the present time a much greater effort is required to develop solutions or solve problems related to management of landslide-prone terrain. Guidebooks, keys and methodologies developed for hazard and risk assessment are limited—these need to be revised and updated. Present slope stability mapping methods rely on professional judgement in that little quantitative terrain attribute information is available. Analytical methods and computer models developed for forest land use have not been tested/modified and applied to forest land planning.

The majority of fan research has been conducted on arid fans with limited forest cover. The forest cover adds an important element to hydrogeomorphic processes on fans. No other region is conducting research or developing site level tools for forest management decision making. To the best of local knowledge, no other work is going on in the US Pacific Northwest.

How can inadequacies or inefficiencies in existing information, methods or tools be rectified?

Existing long term water quality and quantity monitoring stations must be maintained in order to have baseline data. The information from these stations must be made available to forest resource managers. Additional stations are necessary where water quality is a demonstrated issue.

Research is required in: landslide investigation of contributing factors, terrain attributes for describing and characterizing unstable terrain, and precipitation thresholds during rain storms and wet soil conditions. Base level research once completed must be presented in updated FPC guidebooks, field guides and forest Industry training session.

Analytical methods and computer models (GIS application) need further development and testing in different geological/geographic settings to use for forest planning.

What new information, methods or tools are needed?

Research investigation into the cause of landslides will provided insight into contributing factors and possible links to forest management practices. Problems once identified and recognized will enable management change to forest practices.

The identification of field indicators of slope instability are required to develop quantitative landslide-terrain attributes on landslide frequencies and on terrain factors contributing to landslides. Results will be used to calibrate the terrain stability mapping classification, use by the forest industry as well as providing geotechnical information on landslides for engineering applications.

Determination of critical limits for operation safety shutdown requirements is important to reduce the possibility of workers being involved in landslides during rainstorm and wet soil conditions. Research is required to understanding precipitation thresholds through the collection of real time precipitation data, soil recovery rates and through the identification of storms related to historical slope failures.

Existing analytical methods and computer models based on soil, vegetation, geologic, and climate data need to be calibrated and tested for forest land planning. Methods available with modifications could be used to supplement or replace the current Es mapping.

Scientifically based hazard classification scheme for fans. Compendium of forestry experience on fans (positive and negative).

What are some possible projects?

The following Regional Projects are identified:

- Re 3.12-A Water monitoring stations across the region
- Re 3.12-B Terrain attribute studies for geographically distinct areas to: identify field indicators of slope instability and develop quantitative landslide-terrain attributes on landslide frequencies and on terrain factors contributing to landslides.
- Re3.12-C The development and testing/calibration of analytical methods and computer models (eg. SINMAP).
- Re 3.12-D Precipitation thresholds for landslides based on the collection and analysis of real time data (rainfall/ precipitation, runoff, soils, water balance) and through the analysis of storms related to historical slope failures.
- Re 3.12-EGuide books: description of landslide types in forest environments: process recognition and description.
- Slide investigation to understanding contributing factors in relationship to forest management practices.
- Risk analysis method development applicable to forest land management.
- Re 3.12--F Continuance of regional research project into fans.

The following District Issues are relevant and may have contributing projects:

- Mo21 (Alluvial and colluvial Fans)
- Bu8 (ESA mapping)
- Bu11 (water quality monitoring – model calibration)
- Ki3 (water quality monitoring)
- Ka23 (Terrain Stability Mapping)
- NC26 (Terrain Stability mapping)

Issue Reference #: 3.13

Title: BEST MANAGEMENT PRACTICES FOR UNCLASSIFIED STREAM REACHES USING EXISITING STREAM INVENTORY INFORMATION

Description of Issue:

The Fish-Stream Identification Guidebook (FSID) of the Forest Practices Code (FPC), requires all stream reaches to be inventoried to determine fish presence using appropriate and acceptable methods. Stream reach classification using methods other than field based inventory can be achieved under specific circumstances as described in the FSID as a Local Area Agreement. It is the purpose of Issue 3.13 to determine what is an acceptable and appropriate inventory in lieu of reach by reach field inspection for all stream reaches.

What knowledge, analytical methods, or tools are required to address the issue?

In order to address Issue 3.13, the following data requirements exist:

- existing fish & fish habitat inventories completed by a qualified fisheries biologist;
- field based sampling completed within representative watershed and reach types within the area of interest at a sampling intensity level of 10-20% of potentially fish bearing reaches (i.e. reaches < 30% gradient)
- sampling completed in both, low (for larger streams) & high (for smaller streams) flow seasonal conditions
- sampling completed in water temperatures greater than 4°C
- geo-referenced sample points and stream features (eg. falls, cascades) relevant to limiting fish distribution
- a spatial data stream network (eg. TRIM) in which to present the area of interest and the results of the analysis.

Analytical methods and tools that follow the scientific method and can produce repeatable unbiased results are required in addressing the issue. Subjective interpretation or professional judgement is not sufficient. Spatial data models that incorporate existing fish inventory results and are able to predict stream widths with a measurable amount of certainty would also prove invaluable in addressing the issue.

What is the existing status of the knowledge, methods or tools?

To date, the BC Ministry of Fisheries, Inventory Unit, have published the 1:20,000 Reconnaissance Fish and Fish Habitat Methodology (1:20k FFHI), and the Fish Habitat Assessment Tool v2.0 (FHAT20) with the Resource Inventory Committee as standards. The Skeena Region , Fisheries and Habitat Section have published guidelines for Local Area Agreement production that may also be used as a resource. The following is a brief description of the available tools and methods:

1:20K FFHI: The methods described by the 1:20K FFHI provide a framework in which representative watersheds and reaches can be selected, assessed and evaluated. The 1:20k FFHI also provides field data storage and retrieval tools, as well as mapping presentation tools. Compliance with the standards ensures that the requirements itemized in Section 1 above are met. Simple data summaries using descriptive statistics and relational data comparisons will allow for rudimentary classification of reaches that were not individually sampled for fish presence or absence only. Stream width measurements for each reach will still be required in many cases to determine stream class conclusively; however, these measurements can be taken by forestry technicians.

FHAT20: FHAT20 is an extrapolation program used to estimate fish habitat characteristics, fish presence and capability in unsampled reaches based on their remote-sensed characteristics and models relating these characteristics to field-based observations in the sampled reaches. FHAT20 uses data stored in the Field Data Information System (FDIS), the standard reconnaissance inventory project database. The end product from FHAT20 is a set of predictions of channel width and probability of fish presence for all reaches. These predictions are used to estimate the most likely Forest Practices Code (FPC) stream class (S1–S6) for each reach and the level of certainty associated with each prediction.

How can inadequacies or inefficiencies in existing information, methods or tools be rectified?

Inadequacies exist in the application of the identified tools, as historical data formats are generally incompatible. Extensive stream network description, documentation and framework construction is required. This involves, upgrading the existing 1:50,000 watershed atlas base to a 1:20,000 TRIM base. Once this is completed, stream features, historical fish inventory results and any new field data can be entered into the RIC standard Field Inventory Data System (FDIS). FDIS has the ability to identify a random sample of representative reaches from the project area for which field based sampling should or should have occurred. Combined with the addition of biased sample sites, the necessary amount of effort per watershed unit can be defined and is relatively repeatable.

FHAT20 also works exclusively from data entered into the FDISv6.4 or greater. Therefore, in order to classify unclassified reaches using either the 1:20k FFHI or the FHAT 20 methodologies, extensive data gathering and data entry is required. The only way to rectify the situation is through the availability of adequate funding to agencies or organizations who have historical data that requires upgrading or extensive compatible 1:20k FFHI, FDIS data for analysis.

An average cost of approximately $500-$1000 per TRIM sheet exists to complete the upgrading. FHAT20 analysis costs approximately, $5k per project area comprised of a 5th order watershed.

What new information, methods or tools are needed?

No new tools or methods are currently needed. However, alternative methods of analysis and presentation of 1:20k FFHI results may be developed.

What are some possible projects? (Provide the unique Project Number for those Projects submitted for investment in the Project Summary Table)

Re3.13 A. Regional analysis of 1:20k FFHI, FDIS data currently on file on a watershed group scale. Reach types (eg. gradient class, stream size, distance upstream, elevation) in which fish were never present following sampling would be identified.

Re3.13 B. FHAT20 analysis of 3rd order or greater watersheds with FDIS 6.4 or greater data and 1:20,000 scale watershed codes. Watersheds could be selected based on MELP Habitat & Fisheries section priority watersheds with fish habitat protection concerns.

Projects identified above could be completed at a regional or district scale.

Relevant District Issues include: Mo7, Bu4.

Issue Reference #: 5.11

Title: HOW DO WE INCREASE THE PARTICIPATION OF FIRST NATIONS IN THE LOCAL FOREST SECTOR ECONOMY IN LIGHT OF EXISTING POLICY AND LEGISLATIVE CONSTRAINTS?

Description of Issue:

There is broad recognition throughout region of the need to increase participation of First Nations in the local forest economy as a means for providing greater certainty in the forest sector and on the landbase, creating community stability and contributing the settlement of treaties.

Fibre supply is extremely limited and there are significant barriers in terms of costs, policy and legislation that limit the Ministry's ability to increase First Nations participation in forest sector, particularly with respect to providing forest tenure opportunities. There are also significant challenges in terms of First Nations internal capacity to successfully engage in the business side of the industry. Since these issues are provincial in scope and cannot be addressed solely at a regional level, a First Nations Forest Strategy has been developed.

The Ministry has developed a First Nations Forest Strategy that was approved in principle by Cabinet in November 1999. Objectives of the FNFS are to increase aboriginal involvement in forestry from a capacity and business perspective; develop cooperative relationships and business arrangements between First Nations, governments and industry; and to provide incentives to resolve treaties. Efforts in the region to address this issue will be consistent with and feed into the provincial strategy.

For the purposes of developing a regional strategy to address this issue, First Nations involvement in the forest economy is broken into 6 main categories:

First Nations Capacity Building: The need to build First Nations underlies all initiatives aimed at increasing First Nations involvement in the forest sector. An understanding of a First Nation's internal capacity is essential if initiatives are to be successful.

Cultural Heritage Resource Management: First Nations want a role in identifying traditional use and archaeology sites (including CMTs) on the ground and in determining how these sites are considered in forest development plans.

Involvement in Planning: Opportunities to expand First Nations involvement in planning beyond the legal obligation to consult on the FDP can benefit all parties. Including First Nations in planning at a more strategic level during Landscape Unit Planning and in the *development* of FDPs can be extremely helpful in fostering better working relationships, and in effectively dealing with First Nations concerns and interests.

Non-Timber Forest Products (NTFP): Increasingly First Nations are looking to developing markets and business ventures for NTFPs. Development of NTFPs provide an opportunity for First Nations to derive economic benefits from the forests without getting into the business of logging.

Joint Ventures: Development of partnerships between industry and First Nations is an excellent means for increasing First Nations stake in the forest economy while at the same time providing First Nation with access to specialized skills and know-how, marketing and managerial services. Many incentives already exist for industry to partner with local First Nations. Additional incentives are required in order to facilitate more joint ventures between industry and First Nations.

Access to tenure: Access to timber harvesting rights remains the key goal of many First Nations and a chief incentive for industry to form partnerships. A fully committed AAC and legislative constraints hamper MoF's ability to make new tenures available to First Nations.

What is the existing status of the knowledge, methods or tools?

First Nations Capacity Building

First Nations Forest Technician Training Program is being expanded to take on more students and new curriculum being developed to provide business skills training. Seven students have been sponsored by licensee or district in region: Wet'suwet'en/PIR; Gitxsan/SCI (2);

Gitanyow/Bell Pole; LaxKwaalaams/Interfor (2); Wet'suwet'en/Bulkley District. Job shadowing initiatives have occurred on an adhoc basis within some districts subject to available financial resources and staff commitment. First Nations Lands and Resource Capacity Project underway in Burns Lake to deliver training to local First Nations with the goal of enhancing First Nations ability to operate and participate in forest based businesses, partnerships or joint ventures leading to community economic development.

Management of Cultural Heritage Resources

Six TUS completed/5 ongoing/at least 4 remaining to be done in region (see attached table)—access and use of information in planning remains ongoing issue-- Very little strategic planning for how to manage for traditional/sustenance use in forestry operations

All districts have AOA or some form of archaeological site potential mapping complete—additional inventory and field testing is required in most cases to make the potential mapping meaningful for use in operational planning.

First Nations personnel are increasingly being hired by licensees to assess blocks for presence of cultural heritage resources.

Involvement in Planning

MOF/Wet'suwet'en strategic planning pilot project to identify and map Wet'suwet'en interests by landscape unit is ongoing—development of data exchange agreements and management strategies for trails and other cultural heritage resources is required.

Non-Timber Forest Products

A Pine Mushroom management project is underway with Gitanyow. A berry management pilot project underway with Gitxsan. Cultural/Eco-tourism opportunities are being explored by some First Nations.

Joint Ventures

Aside from large scale joint ventures tied to tenure, there is little documentation on smaller scale (but no less important) business arrangements between industry and First Nations within the region. The Wet'suwet'en Accord may result in a model for industry/First Nation to bring potential joint ventures forward with incentive proposals for consideration by governments

Access to Tenure

Existing tools for providing First Nations access timber include Free Use Permit (up to 250m^3 for traditional cultural purposes); Direct Award timber sales (up to 500m^3); SBFEP registration and participation; SBFEP salvage activity; Woodlot License, Forest License, community forest agreements. There are currently 18 forest tenures held in whole or in part by First Nations within the region (see attached table) (this does not include direct award sales or FUPs). The crown's social and economic development objectives for new forest tenures often now include objectives aimed at encouraging First Nation employment and participation in the forest sector. Regional tenure opportunity analysis and strategy development is underway.

What knowledge, analytical methods, or tools are required to address the issue?

First Nations Capacity Building

- Training needs analysis on a community by community basis
- Provision of business advise and expertise to First Nations to access existing or developing business opportunities
- Training programs for First Nations in both business and technical forestry skills
- "Job shadowing" and mentoring programs/initiatives that encourage partnerships and build capacity

Management of Cultural Heritage Resources

- Completion of traditional use studies (TUS) throughout region
- Data sharing agreements to access traditional use information for forestry planning purposes
- AIA contracts that require consulting archaeologists to hire and train local First Nation field assistants when conducting AIAs
- Better models for predicting archaeological site potential that incorporate First Nations TUS

information

- District CMT policies that encourage CMT surveys by trained First Nations personnel in early stages of planning and block layout
- Cultural heritage resource site recognition training for Licensees, MOF staff and First Nations
- Inventory of cultural trails and development of trail management strategies

Involvement in Planning

- New models for First Nations involvement in strategic planning
- Data sharing agreements that provide licensees and districts access to traditional use information and traditional ecological knowledge in exchange for FN access to other mapping products (eg. forest cover, TRIM, digital FDPs)
- Means for collecting and incorporating traditional ecological knowledge into forest planning
- Development of tools to manage for traditional sustenance activities in forest planning (eg., berry gathering, access to totem/canoe quality cedar)

Non-Timber Forest Products (NTFP)

- Market research/feasibility studies
- Inventories/habitat suitability mapping (eg., berries, mushrooms, medicinal plants)
- Development of management strategies for NTFP both on and off the timber harvesting landbase

Joint Ventures

- Better documentation of existing business, training and employment relationships between First Nations and forest industry is needed to provide a benchmark from which further progress can be measured
- Forums for acknowledging existing relationships, sharing lessons and providing support and encouragement for development of new joint ventures
- Industry in-house training for staff on aboriginal issues and culture to promote greater sensitivity and understanding of First Nations needs and aspirations
- Facilitators to bring partners together and broker business relationships
- Strategic negotiations with First Nations to identify and implement joint venture incentives where there is a potential partner and/or tenure opportunity

Access to tenure

- Policy flexibility and legislative changes likely required in order to substantially increase ability for First Nations to acquire timber tenures
- Enter Interim measure negotiations with First Nations where: there is support from industry and adjacent communities; there is a potential tenure opportunity available; and there is high probability of a successful venture resulting

What are some possible projects? (Provide the unique Project Number for those Projects submitted for investment in the Project Summary Table)

Near Term Strategy

Projects aimed at increasing First Nations participation in local forest economy in the near term should address the following criteria:

- Build relationships/partnerships between industry, First Nations and local community;
- Build First Nations capacity to participate in the forest sector economy;
- Provide jobs for First Nations in forest sector;
- Wherever possible, support strategic negotiations with First Nations aimed at pursuing joint venture or tenure opportunities or achieving increased certainty on the land base

The continuation of ongoing Traditional Use Studies is considered a Regional Project (Re5.11 A).

The following District Issues are relevant: Bu13, NC6, NC27, NC29.

8.3.2 District Strategies

The following strategies were compiled at the District level to direct District Issues. These may or may not overlap with Regional Strategies. They have not been edited to reflect the Regional strategies.

Issue Reference #: Bu4
Title: BULKLEY FISH AND FISH HABITAT INVENTORY
Description of Issue: There may be unnecessary constraints in timber access and supply due to the uncertainties related to stream classification and possible over estimates of inoperable landbase.
What knowledge, analytical methods, or tools are required to address the issue? In order to strengthen sustainable forest management, forestry managers must at a minimum know what values are present in a given area. Identifying where fish are, what fish are there, and potential barriers to fish habitat utilization are critical. These inventories will work to provide this data, aiding in the management of water, timber, and environmental values.
What is the existing status of the knowledge, methods or tools? The methodology behind the fish and fish habitat inventories is well recognized as it has been formalized under the Resource Inventory Committee (RIC) standards. Some previous work was done prior to these demanding standards, as well as numerous streams were given an inferred status.
How can inadequacies or inefficiencies in existing information, methods or tools be rectified? Complete 1:20000 sampling including some second sampling to confirm "inferred fish presence on non-presence".
What new information, methods or tools are needed? The methods and tools currently exist to undertake these inventories.
What are some possible projects? (Provide the unique Project Number for those Projects submitted for investment in the Project Summary Table) Complete 1:20,000 second sample fish and fish habitat inventories to confirm fish presence or absence, thereby confirming riparian classifications. On mapsheets where second samples are completed, existing inventories will be brought up to new RIC mapping standards bringing the outputs of this process in line with current digital requirements for TSR and Forest Estate Modeling. Issue # Bu4, Projects A and B.

Issue Reference #: Ca4

Title: DEASE LIARD CARIBOU AND MOOSE STUDIES – CASSIAR TSA

Description of Issue:

Since 1996, caribou and moose studies have occurred in the Dease Liard Supply Block of the Cassiar TSA. The Chief Forester indicated the need for better ungulate habitat information for TSR2. Caribou and moose seasonal movements, core seasonal ranges, and gathering of stand level information are some of the data that have been collected. This information has been used for the CIS LRMP, TSR2, and is being incorporated into the strategic forestry planning for timber harvesting with the Kaska First Nation. There exists several years of pre-timber harvest baseline data but it necessary to continue the studies. It is likely that a short term license will come from the planning and continued monitoring of caribou and moose will be required to ensure planning objectives and strategies are met. As well, the province has agreed to and commenced caribou management planning with the Yukon, Federal, and Kaska governments that will require continued population and habitat monitoring for the life of the plan (approximately 5 years).

What knowledge, analytical methods, or tools are required to address the issue?

Knowledge-Caribou and moose population and habitat use literature within BC, and Canada

Analytical methods and tools – radio and GPS collars, landscape and stand level habitat mapping (location data, home range analysis, and GIS), population surveys, and fixed wing monitoring of collared animals.

What is the existing status of the knowledge, methods or tools?

All methods and tools are proven techniques that have been repeated in other areas of the province or Canada. The scientific knowledge base is current and extensive.

How can inadequacies or inefficiencies in existing information, methods or tools be rectified?

By increasing the number of locations of gps and radio collared animals through mutli-year monitoring the accuracy and precision of habitat mapping increases. This in turn allows for lower impacts from industrial development, and greater flexibility in applying strategic planning objectives and strategies.

What new information, methods or tools are needed?

Stand level habitat use, home range areas, critical winter range, and sex/age habitat use by caribou and moose in the Dease Liard Supply block of the Cassiar TSA.

What are some possible projects?

C4-A Dease Liard Caribou and Moose – project includes maintaining sample of vhf and gps collared animals, fixed wing monitoring, helicopter population surveys, analyzing animal location data and forest cover attributes to create and refine stand level habitat mapping.

Issue Reference #: Ca7

Title: BOB QUINN\ISKUT VALLEY FISHER – CASSIAR TSA

Description of Issue:

Uncertain distribution of critical habitats and home range areas for IWMS species (Fisher) in the Bob Quinn/Iskut River Valley. The CIS LRMP indicated the need for fisher information to be collected in probable forest development areas. There is a high probability that a short term forest license will be located in a landscape unit with high fisher habitat (1:250,000 BEI mapping). However, there is no stand level habitat mapping required for LRMP implementation, landscape unit planning, and operational planning.

What knowledge, analytical methods, or tools are required to address the issue?

Knowledge- Fisher and furbearer population and habitat use literature within BC, and Canada

Analytical methods and tools – radio and gps collars, landscape and stand level habitat mapping (location data, home range analysis, and GIS), and monitoring of collared animals.

What is the existing status of the knowledge, methods or tools?

All methods and tools are proven techniques that have been repeated in other areas of the province or Canada. The scientific knowledge base is current and extensive.

How can inadequacies or inefficiencies in existing information, methods or tools be rectified?

By increasing the number of locations of gps and radio collared animals through multi-year monitoring the accuracy and precision of habitat mapping increases. It will be possible to develop better information of landscape and stand level for fisher in northern Interior Cedar Hemlock forests. This in turn allows for lower impacts from industrial development, and greater flexibility in applying strategic planning objectives and strategies.

What new information, methods or tools are needed?

What are some possible projects ?

C7-A Bob Quinn\Iskut Valley Fisher – project includes maintaining sample of vhf and gps collared animals, collared animal monitoring, analyzing animal location data and forest cover attributes to create and refine stand level and landscape habitat mapping.

Issue Reference #: Ca12

Title: MCBRIDE VALLEY CARIBOU HABITAT – CASSIAR TSA

Description of Issue:

Uncertain distribution of critical habitats and access issues for caribou in the McBride River Valley. The CIS LRMP indicated the need for caribou habitat information to be collected in the McBride Valley for adaptive management strategies with forest development. There is high caribou habitat (1:250,000 BEI mapping) in the area but it is too broad for landscape or operational planning. There is no stand level habitat mapping required for LRMP implementation, landscape unit planning, and operational planning.

To apply adaptive management for forestry operations in this area, it is necessary to determine critical habitats

What knowledge, analytical methods, or tools are required to address the issue?

Knowledge- Caribou habitat use literature within BC, and Canada. Caribou data will also be used from prior local studies on the Spatsizi caribou herd.

Analytical methods and tools – landscape and stand level habitat mapping (location data, home range analysis, and GIS), and monitoring of habitat use by caribou (helicopter and ground surveys).

What is the existing status of the knowledge, methods or tools?

All methods and tools are proven techniques that have been repeated in other areas of the province or Canada. The scientific knowledge base is current and extensive.

How can inadequacies or inefficiencies in existing information, methods or tools be rectified?

By using caribou location data from a local multi-year study and current literature, it will be possible to develop landscape and stand level habitat mapping for caribou in the McBride Valley. The mapping will be ground truthed to refine the model for landscape and operational planning.

What new information, methods or tools are needed?

What are some possible projects ?

C12-A McBride Caribou – project includes creating landscape and stand level caribou mapping from prior local caribou research and aerial and ground surveys to confirm habitat use.

Issue Reference #: NC13

Title: COASTAL LOG DUMP ASSESSMENT AND DEVELOPMENT OF BEST MANAGEMENT PRACTICES

Description of Issue:

Timber harvesting in coastal BC relies on marine and freshwater log dumps as critical links for transporting logs to market. Log dumps and loadouts occur in freshwater and marine foreshore settings which provide habitat for marine organisms, including commercially and culturally valuable fish and shellfish stocks. Licensees are faced with the challenge of economically developing coastal forests while minimizing the impacts to valuable non-timber resources and undergo lengthy agency referral processes to obtain approval which slows job creation and economic development. This strategy aims to improve the review process and develop Best Management Strategies for mitigation of log dump activities on marine habitat by implementing a technical Working Group and development of effective mitigation strategies for publication.

What knowledge, analytical methods, or tools are required to address the issue?

- Familiarity and understanding of the current provincial and federal agency referral and approval process which is inefficient, costly and very lengthy
- Technical understanding of the impacts of log handling and log dumps on marine environment and habitat (well researched already)
- Knowledge of the mitigation strategies and techniques used to reduce log handling impacts on aquatic environment
- Knowledge of marine and intertidal ecology and habitat use of valuable fish and shellfish organisms
- Coastwide summary of log dump and log handling issues and successful approaches to resolving impacts
- Tool: A Working Group involving government agency, First Nations and industry representatives must be developed as a forum to look at improvements and streamlining the approval process, and will identify information gaps and pursue joint projects to develop and refine mitigation techniques and to provide guidance for continued development of log handling facilities.

What is the existing status of the knowledge, methods or tools?

The current approval process is well known to be very time consuming, costly and inconsistently applied coast wide. As a result, additional expense and lengthy delays are common for coastal logging operations which negatively impact economic activity and forest development. The objective of a Working Group is to recommend process improvements to the stakeholders and agencies to ensure a more consistent and less time consuming approval process.

Substantial research exists on the impacts of log handling on aquatic organisms and habitat but is widely scattered and not readily available to agency staff or industry.

Little research exists which documents mitigation strategies and techniques for coastal log handling operations.

Little published and accessible information exists regarding debris control mitigation strategies and techniques used along the coast or the relative successes or merits of different techniques in a variety of situations. This information is critical since development of log handling facilities relies upon effective debris mitigation techniques to reduce impacts to non-timber resources. Collation and publication of techniques would increase awareness and implementation of log handling and debris control techniques, similar to other publications of best management strategies and techniques.

How can inadequacies or inefficiencies in existing information, methods or tools be rectified?

The formation of a technical Working Group and research and publication of Best Management

Practices would address several current problems surrounding development of log handling facilities:

- a streamlined, well-understood and consistent approval process could be developed which would benefit agency staff and industry through lower costs and shorter approval times,
- greater awareness and education regarding successful mitigation strategies would be available via development and publication of BMPs so that industry and government benefit with the reduction of impacts and improved operation of log handling facilities,
- new strategies and successful techniques would be communicated much more rapidly to licensees, government and industry through a Working Group which would benefit marine resources.

What new information, methods or tools are needed?

See above.

What are some possible projects ?

NC13 – A

- formation of Working Group to address approval process and lack of information, possibly including presentations from people who utilized successful strategies for reducing log handling impacts
- research and publication of Best Management Practices and Log Handling Impact Issues with respect to logging operations
- development of test studies to try new techniques for minimizing impacts to aquatic environments and organisms and effective communication of successful strategies.

Issue Reference #: NC14

Title: GOAT, MOOSE AND DEER WINTER HABITAT ASSESSMENT FOR THE NORTH COAST TSA.

Description of Issue:

Ungulate winter range on the North Coast TSA is a concern of MELP and MoFas will as with Licensees. There has been very little information collected to date on the winter distribution of mountain goat, moose and blacktailed deer. Accurate identification of critical ungulate winter range is becoming increasingly more important as development activities continue in the TSA.

What knowledge, analytical methods, or tools are required to address the issue?

- Determine winter distribution of moose, goat and deer.
- Determine snow zones in relation to moose and deer.

What is the existing status of the knowledge, methods or tools?

- The Intensive Wildlife Forestry Research guidebook can be used as a basis for determining deer winter range.
- There has been very little information collected relating to coastal goat and moose.

How can inadequacies or inefficiencies in existing information, methods or tools be rectified?

- Winter aerial surveys to determine areas of use for moose and goat.
- Snow zone surveys to determine areas of deep snow as they pertain to moose, goat and deer.

What new information, methods or tools are needed?

- Winter distribution of moose, goat and deer.
- Snow zone identification.

What are some possible projects?

NC14 - A

- Winter flights for moose and goat.
- Snow zone mapping for moose, goat and deer.

Issue Reference #: NC7 & NC8

Title: MARBLED MURRELET HABITAT AND POPULATION ASSESSMENT FOR THE NORTH COAST TSA

Description of Issue:

The Marbled Murrelet (*Brachyramphus marmoratus*) is a provincially blue listed species, and listed as threatened by COSEWIC. In Canada, it occurs only on the BC coast, but also occurs in neighbouring Alaska and the Northwest US states. This seabird is unusual in its' habit of nesting inland on trees (as far as 60 km inland), while spending the remainder of it is life at sea. It has a low reproductive rate, and relatively long life span. Conservation concerns centre on sufficient forest nesting habitat, and survival at sea.

A new national Recovery Plan is presently in preparation that will guide conservation efforts. That plan is expected to provide recovery targets in terms of nesting habitat by geographic area of the BC coast. It is likely that murrelets will also be a focus species of any land-use planning process that occurs on the North Coast.

At present, there is little data other than anecdotal or ad-hoc observations on the abundance and distribution of murrelets in the North Coast TSA. This prevents effective assessment of the importance of the TSA in the broader coast-wide context, and of forest types and watersheds within the TSA.

This proposal is to conduct a systematic assessment of nesting abundance and habitat for the North Coast TSA. The objective is to provide the information necessary to determine if there is a significant potential forestry/murrelet conflict, and if so to identify potential conservation strategies.

What knowledge, analytical methods, or tools are required to address the issue?

- A technical committee consisting of ecosystem and species specialists, ecologists as well as industry representatives will need to be created to oversee the project.
- A step by step procedure of assessment and inventory will be utilized to maximize management information for investment made.
- Existing (but unverified) models of nesting habitat suitability and density from elsewhere on the coast will initially be used to rank watersheds, followed by watershed-level verification using radar techniques and by recording sightings on the ocean.
- Mapping algorithms will be used to map the TSA as to expected potential for murrelet nesting habitat.
- A statistical power analysis will be conducted using randomized sampling to achieve various levels of precision in estimating LU and TSA nesting abundance, and in detecting a correlation with predicted habitat suitability.

What is the existing status of the knowledge, methods or tools?

- At present, there is little data other than anecdotal or ad-hoc observations on the abundance and distribution of murrelets in the North Coast TSA.
- Existing models of nesting habitat suitability and density , which will be used to initially rank watersheds, are presently unverified but will suffice for initial ranking.
- Radar sampling has been demonstrated to be an effective technique for large-scale assessment of bird abundance using forested watersheds.

How can inadequacies or inefficiencies in existing information, methods or tools be rectified?

Note: more or less the same as below.

What new information, methods or tools are needed?

The project will be an iterative process of refinement until the predictive capability by watershed is adequate for management decisions. Maps and summary tables of the probability of each

LU\watershed being used by murrelets, and their relative abundance will be produced.

What are some possible projects?

- NC7 – A, NC8 - A
- Using the map results, stratify and tally by LU the watersheds with characteristics suitable for radar sampling methodology. Assess potential need for other sampling methods on less defined terrain.
- From the list of potential sample watersheds, conduct an initial statistical power analysis of potential cost and sampling effort needed to achieve various levels of precision in estimating LU and TSA nesting abundance, and in detecting a correlation with predicted habitat suitability from the mapping.
- Complete a detailed inventory proposal based on map and statistical work. The proposal will include sample size and cost needed to achieve various levels of confidence in the reliability of map-based distribution.

Issue Reference #: NC2, NC3 and NC4

Title: EVALUATION AND IMPROVEMENT OF BASE DATA USED IN THE NORTH COAST TIMBER SUPPLY REVIEW PROCESS

Description of Issue:

The North Coast timber supply review is an important factor in the Chief Forester's determination of the AAC for the North Coast TSA. There is uncertainty around various factors used in the TSR process such as operability, site index and forest cover. In order for the Chief Forester to assign an AAC for the North Coast which accurately reflects timber supply potential, the TSR has to be founded on accurate inventories.

What knowledge, analytical methods, or tools are required to address the issue?

- Determine what factors used in the TSR process are suspect such as site index, forest cover, and wildlife .
- Determine an approach to improve the value of the suspect data.

What is the existing status of the knowledge, methods or tools?

- Various factors used in the TSR process are suspect and need to be evaluated and improved upon.
- There is information on wildlife and other resource values which there is currently no data on.

How can inadequacies or inefficiencies in existing information, methods or tools be rectified?

Conduct inventories, field checks, surveys etc. to collect needed information and/or to evaluate the quality of existing information.

What new information, methods or tools are needed?

- The effect that stream riparian areas have on timber supply.
- Updated air photos.
- The effect that wildlife has on timber supply such as ungulate winter range and marbled murrelet habitat.
- The effect that coastal log dumps have on timber supply.
- Accurate determination of site index.

What are some possible projects?

- NC2, NC3 and NC4
- Improved site index determination using a vegetation survey based on timber component.
- Forest cover map updates using most up to date data sources and ground proofing.
- Using updated forest cover maps etc. do an accurate determination of operable area.
- Determine the effect of riparian areas and log dumps on timber supply.

8.4 Regional Summary of Recommendations

The first table summarizes potential projects of a Regional nature. These are a combination of ongoing and new projects. They are derived largely from the Regional Strategy documents outlined in Section 8.3. However, they do not include all potential projects identified by those Regional Strategies because many such projects would best be implemented and undertaken at the District level.

The following tables are project summary tables for each District from the Lakes Forest District to the North Coast Forest District.

8.4.1 Regional Project Summary Tables

Issue #	Proj #	Project Name	Proj Stat (E or N)	Type of Knowledge Investment (E, U or N)	Type of Benefit	Scope of Benefit (# MU, R, P)	Timing of Benefit (S or L)	Ability to use knowledge	Timing - when is completion req'd?	Prob. Of success (H,M,L)	Potential source of funding (RIP, RE, HIP, CLUPE)	Investment to date ($)	Investment to date (yrs)	$ req'd 2001-02	$ req'd 2002-03	$ req'd 2003-04	$ req'd 2004-05	$ Total (incl. Existing investment)	Total # Yrs to complete (incl. Yrs to date)
1			2	3	4	5	6	7		8	9								
Re1.21	A	Workshop - Landscape modelling	N	E, U	E,T,NT	R	L	TSR, LRMP, LUP	2002	H	RIP	$0	0	$18,000	$0	$0	$0	$18,000	1
Re1.21	B	Workshop - successional pathways	N	E, U	E, T, NT	R	L	TSR, LRMP, LUP	2002	M	RIP	$0	0	$18,000	$0	$0	$0	$18,000	1
Re1.21	C	Workshop - NDT data models	N	E, U	E, T, NT	R	L	TSR, LRMP, LUP	2002	M	RIP	$0	0	$18,000	$0	$0	$0	$18,000	1
Re1.21	D	Workshop - Indicators of Biodiversity Conservation	N	E, U	E, T, NT	R	L	TSR, LRMP, LUP	2002	M	RIP	$0	0	$18,000	$0	$0	$0	$18,000	1
Re1.23	A	Riparian Mgmt - adaptive mgmt project	N	E, U, N	E, T, NT	R, P	L	TSR, LRMP, LUP	Indefinite	M	RE	$0	0	$80,000	$80,000	$80,000	?	$240,000	10+
Re1.23	B	Riparian use by semi-aquatic mammals	N	N	E, T, NT	R, P	L	TSR, LRMP, LUP	2004	H	RIP	$0	0	$12,000	$12,000	$12,000	$0	$36,000	3
Re1.24	A	Workshop on ungulate winter range	N	E, U	E, T, NT	R	S, L	TSR, LRMP, LUP	2002	H	RIP	$0	0	$8,000	$0	$0	$0	$8,000	1
Re1.33	A	Data sharing network	N	U, E	E, T, NT	R, P	S	TSR, LRMP, LUP	2003	H	RIP, IFPA	$0	0	$77,000	$188,000	$0	$0	$265,000	2
Re1.33	B	Inventory of inventories	N	U, E	E, T, NT	R	S	TSR, LRMP, LUP	2001	H	RIP	$0	0	$50,000	$0	$0	$0	$50,000	1
Re2.11	A	Permanent sample plot remeasures	E	N	T, NT	MU,R,P	L	TSR, LRMP, LUP,	2010	H	RIP	$125,000	2	$45,000	$162,000	$132,000	$100,000	$564,000	7

Issue #	Proj #	Project Name	Proj Stat (E or N)	Type of Knowledge Investment (E, U or N)	Type of Benefit	Scope of Benefit (# MU, R, P)	Timing of Benefit (S or L)	Ability to use knowledge	Timing - when is completion req'd?	Prob. Of success (H,M,L)	Potential source of funding (RIP, RE, HIP, CLUPE)	Investment to date ($)	Investment to date (yrs)	$ req'd 2001-02	$ req'd 2002-03	$ req'd 2003-04	$ req'd 2004-05	$ Total (incl. Existing investment)	Total # Yrs to complete (incl. Yrs to date)
1			*2*	*3*	*4*	*5*	*6*	*7*		*8*	*9*								
Re3.12	A	Long term streamflow & water qual. data	E	E, N	E, T, NT	MU,R,P	L	TSR, LRMP, LUP,	2005	H	RIP	$1,530,000	5	$170,000	$170,000	$170,000	$170,000	$2,210,000	9
Re3.12	B	Landslide indicators	E	E,U,N	E, T, NT	MU,R,P	S,L	TSR, LRMP, LUP,	2003	H	RIP	$50,000	2	$25,000	$25,000	$25,000	$0	$125,000	4
Re3.12	C	SINMAP model	E	E,U	E, T, NT	MU,R,P	S,L	TSR, LRMP, LUP,	2003	H	RIP	$18,000	1	$30,000	$0	$0	$0	$48,000	2
Re3.12	D	Precipitation threshold	N	E,U ,N	E, T, NT	MU,R	S,L	TSR, LRMP, LUP,	2005	H	RIP	$0	0	$10,000	$50,000	$50,000	$50,000	$160,000	4
Re3.12	E	landslide guidebooks	N	E	E, T, NT	MU,R	S,L	TSR, LRMP, LUP,	2005	H	RIP	$0	0	$0	$25,000	$0	$0	$25,000	1
Re3.12	F	Fan research	E	N	E, T, NT	MU,R,P	L	TSR, LRMP, LUP,	2005	H	RE	?	?	?	?	?	?	?	?
Re3.13	A	FFHI, FDIS data reanalysis	N	E, U	E, T, NT	R	S, L	TSR, LRMP, LUP,	2002	H	RIP	$0	0	$20,000	$0	$0	$0	$20,000	1
Re3.13	B	FHAT 20 analysis	N	E, U	E, T, NT	R	S, L	TSR, LRMP, LUP,	2002	H	RIP	$0	0	$20,000	$0	$0	$0	$20,000	1
Re5.11	A	Traditional Use Studies	E	N	E, T, NT	MU,P	L	LRMP	2005	H	HIP	?	4	?	?	?	?	?	?

Notes		
	1	Regional Projects are itemized by Regional Issue Number as per the Matrix of CCFM Goals
	2	E = existing, N = new
	3	E = Organization, Analysis or Synthesis of **E**xisting Info; U = Tools or Extension to Enhance **U**se of existing Info; N = Field Inventory or Research
	4	Reduction of risk to: E = Environmental values, T = timber resource values, NT = non-timber resource benefits. There can be more than one.
	5	# MU = # Forest Districts (Management Units) affected; R = Regional effect; P = Provincial effect
	6	S = short-term (< 5 yrs); L = Long term
	7	Strategic decision process for implementation of plans: SLUP (e.g., Regional, LRMP), TSR
	8	H = proven techniques; L = unproven techniques or methods
	9	RIP = FRBC Regional Investment Plan; RE = Research; HIP = FRBC HQ Investment Plan; CLUPE = Crown Land Use Planning & Extension

8.4.2 Lakes Forest District Project Summary Table

Issue #	Proj #	Project Name	Proj Stat (E or N)	Type of Knowledge Investment (E, U or N)	Type of Benefit	Scope of Benefit (# MU, R, P)	Timing of Benefit (S or L)	Ability to use knowledge	Timing - when is completion req'd?	Prob. Of success (H,M,L)	Potential source of funding (RIP, RE, HIP, CLUPE)	Investment to date ($)	Investment to date (yrs)	$ req'd 2001-02	$ req'd 2002-03	$ req'd 2003-04	$ req'd 2004-05	$ Total (incl. Existing investment)	Total # Yrs to complete (incl. Yrs to date)
1			*2*	*3*	*4*	*5*	*6*	*7*		*8*	*9*								
La1	A	Landsat-7/CASI imagery remote sensing of bark beetles	E	N	E,T,NT	MU	S,L	LRMP,TSR	Oct. 31	M	RIP	$3000- District	1	$8,000	$8,000	$8,000	$8,000	$27,000	5+
La2	A	TRIM II Bases	N	E	T,NT	MU	L	LRMP,TSR	2001	H	RIP	$315,000-PG TRIM II	2	$100,000				$415,000	1
La3	A	VEG INV.	N	N	E,T,NT	MU	S,L	LRMP,TSR	2003	H	RIP	$1,500,000	2	$300,000	$300,000			$2,100,000	2
La4	A	Forest Pest Strat	N	E,N	E,T	MU	S,L	LRMP,TSR	2001	H	RIP	$0	0	$5,000				$5,000	1
La5	A	PEM/TEM	N	N	E,T,NT	MU	S,L	LRMP,TSR	2003	H	RIP	$0	0	$0	$625,000	$625,000		$1,250,000	2
La6	A	First Nation Mapping	E	E,U,N	E,T,NT	MU	S,L	LRMP,TSR	2001	H	RIP	$100,000	3	$50,000	$25,000	$25,000	$25,000	$225,000	8
La7	A	Spatial Landscape Unit Plans	E	E,U,N	T,NT	MU	S,L	LRMP,TSR	2001	H	RIP	?	1	?				?	2
La8	A	Monitor Environmentl Wellness	N	E,U,N	T,NT	MU	S, L	LRMP,TSR	2002	M	RIP	$0	0	?				?	2
La9	A	Caribou Lichen Study	N	N	E,T,NT	MU	S,L	LRMP,TSR	2001	M	RIP	$0	0	$60,000	$20,000	$20,000	$20,000	$120,000	5
La10	A	Caribou/Moose Radio Collaring	E	N	E,T,NT	MU	S,L	LRMP,TSR	2005	H	RIP	$60,000	1	$60,000	$60,000	$60,000	$60,000	$300,000	5
La11	A	Mt Goat Monitoring	E	N	E,T,NT	MU	S,L	LRMP,TSR	2003	H	RIP	$0	0	$40,000	$40,000	$20,000		$100,000	3
La12	A	Northern Goshawk Project	E	N	E,T,NT	MU	S,L	LRMP,TSR	2005	M	RIP	$140,000?	2?	$70,000	$70,000	$70,000		$420,000	7
La13	A	Hydrometric Station Establishment	E	N	E,T,NT	MU	S,L	LRMP,TSR	200?	H	RIP	?	?	$30,000	?	?	?	?	?
La14	A	Water Quality Monitoring	?	N	E,NT	MU	S,L	LRMP,TSR	2005	H	RIP	?	?	?	?	?	?	?	?
La15	A	Fish Habitat Invent	E	E,U,N	E,T,NT	MU	S,L	LRMP,TSR	?	H	RIP	$500,000	4	$200,000	$200,000			$900,000	6+
La16	A	Reformat Existing Fish Inventory	N	E,U,N	E,T,NT	MU	S,L	LRMP,TSR	2001	H	RIP	$7,500	0					$7,500	1

Notes

1 Regional Projects are itemized by Regional Issue Number as per the Matrix of CCFM Goals
2 E = existing, N = new
3 E = Organization, Analysis or Synthesis of Existing Info; U = Tools or Extension to Enhance Use of existing Info; N = Field Inventory or Research
4 Reduction of risk to: E = Environmental values, T = timber resource values, NT = non-timber resource benefits. There can be more than one.
5 # MU = # Forest Districts (Management Units) affected; R = Regional effect; P = Provincial effect
6 S = short-term (< 5 yrs); L = Long term
7 Strategic decision process for implementation of plans: SLUP (e.g., Regional, LRMP), TSR
8 H = proven techniques; L = unproven techniques or methods
9 RIP = FRBC Regional Investment Plan; RE = Research; HIP = FRBC HQ Investment Plan; CLUPE = Crown Land Use Planning & Extension

8.4.3 Morice Forest District Project Summary Table

Issue #	Proj #	Project Name	Proj Stat (E or N)	Type of Knowledge Investment (E, U or N)	Type of Benefit	Scope of Benefit (# MU, R, P)	Timing of Benefit (S or L)	Ability to use knowledge	Timing - when is completion req'd?	Prob. Of success (H,M,L)	Potential source of funding (RIP, RE, HIP, CLUPE)	Investment to date ($)	Invest ment to date (yrs)	$ req'd 2001-02	$ req'd 2002-03	$ req'd 2003-04	$ req'd 2004-05	$ Total (incl. Existing investment)	Total # Yrs to complete (incl. Yrs to date)
1			2	3	4	5	6	7		8	9								
Mo1	A	Mtn Goat Habitat Suitability mapping	N	E	E, T, NT	1 MU	L	LRMP, IFPA, TSR	Mar-02	H	RIP	$0	0	$35,000	$0	$0	$0	$35,000	1
Mo2	A	Mtn Goat Responses to forest development	E	N	E, NT	3 MU (Morice, Lakes, Bulkley)	S,L	LRMP, IFPA, TSR, FDP	Mar-03	H	RIP	$60,000	2	$35,000	$35,000	$0	$0	$130,000	4
Mo2	B	Resident low elev. Goat use of forested land base	E	N	E, T, NT	2 MU (Morice, Lakes)	S, L	LRMP, IFPA, TSR, FDP	Mar-04	M	RIP	$35,000	1	$175,000	$50,000	$50,000	$0	$310,000	4
Mo3	A	Goshawk Nest Inventory & Monitoring	E	N	E, T, NT	3 MU (Morice, Lakes, Bulkley)	S, L	LRMP, IFPA, TSR, FDP	Mar-03	H	RIP	$200,000	3	$75,000	$75,000	$30,000	$30,000	$410,000	5
Mo4	A	Bull Trout population inventory and habitat use	E	N	E, NT	1 MU	S, L	LRMP, IFPA, TSR, FDP	Mar-02	H	RIP	$112,000	1	$60,000	$0	$0	$0	$172,000	2
Mo5	A	Telkwa Caribou Recovery Project	E	N	E, T, NT	2 MU (Morice, Bulkley)	S, L	LRMP, IFPA, TSR, FDP	Mar-05	H	RIP (mostly in Bulkley)	$175,000 (Bulkley)	3	$75,000 (Bulkley)	$60,000 (Bulkley)	$50,000 (Bulkley)	$50,000 (Bulkley)	$410,000 (Bulkley)	7
Mo6	A	Validation and detailing of Grizzly Bear habitat suitability mapping	N	E, N	E, T, NT	1 MU	S, L	LRMP, IFPA, TSR, FDP	Mar-02	H	RIP	$0	0	$45,000	$0	$0	$0	$45,000	1
Mo7	A	Fish and Fish Habitat Inventory - HFP	E	N	E, T, NT	Chart areas	S, L	IFPA, TSR, FDP	?	H	RIP	?	?	?	?	?	?	?	?
Mo7	B	Fish and Fish Habitat Inventory - Canfor	E	N	E, T, NT	Chart areas	S, L	IFPA, TSR, FDP	?	?	?	?	?	?	?	?	?	?	?
Mo8	A	Red and blue plant community mapping from PEM, with field description	N	E, N	E, T, NT	1 MU	S, L	LRMP, IFPA, TSR, FDP	Sep-03	H	RIP	$0	0	$75,000	$20,000	$0	$0	$95,000	2

Issue #	Proj #	Project Name	Proj Stat (E or N)	Type of Knowledge Investment (E, U or N)	Type of Benefit	Scope of Benefit (# MU, R, P)	Timing of Benefit (S or L)	Ability to use knowledge	Timing - when is completion req'd?	Prob. Of success (H,M,L)	Potential source of funding (RIP, RE, HIP, CLUPE)	Investment to date ($)	Invest ment to date (yrs)	$ req'd 2001-02	$ req'd 2002-03	$ req'd 2003-04	$ req'd 2004-05	$ Total (incl. Existing investment)	Total # Yrs to complete (incl. Yrs to date)
1			*2*	*3*	*4*	*5*	*6*	*7*		*8*	*9*								
Mo9	A	Growth & Yield	N	E, U, N	E, T, NT	1 MU	S, L	LRMP, IFPA, TSR, FDP	Mar-03	H	RIP	$0	0	$35,000	$10,000	$0	$0	$45,000	2
Mo10	A	Ungulate (Moose, Deer) Winter Range Mapping from PEM	N	E, N	E, T, NT	1 MU	S, L	LRMP, IFPA, TSR, FDP	Mar-03	H	RIP	$0	0	$80,000	$30,000	$0	$0	$110,000	2
Mo11	A	Marten Habitat Suitability Mapping from PEM with validation	N	E, N	E, T, NT	1 MU	S, L	LRMP, IFPA, TSR, FDP	Mar-03	H	RIP	$0	0	$10,000	$25,000	$0	$0	$35,000	2
Mo12	A	Temperature Sensitive Streams	E	N	E, NT	1 MU	S, L	IFPA, TSR, FDP	?	?	?	?	?	?	?	?	?	?	?
Mo13	A	Recreation Planning	N	E	E, NT	1 MU	S, L	LRMP, IFPA, TSR, FDP	?	?	?	?	?	?	?	?	?	?	?
Mo14	A	Lake Classification Workshop	N	E, N	E, T, NT	1 MU	S, L	LRMP, IFPA, TSR, FDP	Mar-02	H	RIP	$0	0	$7,500	$0	$0	$0	$7,500	1
Mo14	B	Lakeshore Mgmt Prescriptions - Habitat Selection by semi-aquatic mammals	N	N	E, T, NT	3 MU (Morice, Lakes, Bulkley)	S, L	LRMP, IFPA, TSR, FDP	Mar-03	H	RIP	$0	0	$35,000	$35,000	$0	$0	$70,000	2
Mo15	A	Orthophotos	N	N	E, T, NT	1 MU	S	LRMP, IFPA, TSR, FDP	?	H	RIP	?	?	?	?	?	?	?	?
Mo16	A	Fisher habitat suitability & capability mapping from PEM with validation	N	E, N	E, T, NT	1 MU	L	LRMP, IFPA, TSR, FDP	Mar-03	H	RIP	$0	0	$10,000	$25,000	$0	$0	$32,000	2
Mo17	A	Stream riparian mgmt guidelines workshop	N	E	E, T, NT	1 MU	L	LRMP, IFPA, TSR, FDP	Mar-02	M	RIP, - note also Regional initiative	$0	0	$7,500	$0	$0	$0	$7,500	1
Mo18	A	Data warehousing	N	E, U	E, T, NT	Regional	L	LRMP, IFPA, TSR, FDP	Mar-03	M	RIP - note Regional also	$0	0	$25,000	$120,000	$0	$0	$145,000	2
Mo19	A	Forest Cover data	N	E, N	E, T,	Part of	S, L	LRMP,	Mar-02	M	RIP	$0	0	$40,000	$0	$0	$0	$40,000	1

Issue #	Proj #	Project Name	Proj Stat (E or N)	Type of Knowledge Investment (E, U or N)	Type of Benefit	Scope of Benefit (# MU, R, P)	Timing of Benefit (S or L)	Ability to use knowledge	Timing - when is completion req'd?	Prob. Of success (H,M,L)	Potential source of funding (RIP, RE, HIP, CLUPE)	Investment to date ($)	Invest ment to date (yrs)	$ req'd 2001-02	$ req'd 2002-03	$ req'd 2003-04	$ req'd 2004-05	$ Total (incl. Existing investment)	Total # Yrs to complete (incl. Yrs to date)
1			*2*	*3*	*4*	*5*	*6*	*7*		*8*	*9*								
		upgrade			NT	1 MU (33 sheets)		IFPA, TSR, FDP											
Mo20	A	Site Productivity - integrating G&Y with wildlife habitat parameters	E	E, N	E, T, NT	I MU	S, L	LRMP, IFPA, TSR, FDP	Mar-03	M	RIP - note also a Reg. initiative	?	0	$40,000	$40,000	$0	$0	$80,000	?
Mo21	A	Alluvial and colluvial Fans	N	E, N	E, T, NT	Regional	S, L	LRMP, IFPA, TSR, FDP	Mar-04	H	RIP	$0	0	$20,000	$20,000	$20,000	$0	$60,000	3
Mo22	A	District web page	N	E, U	E, T, NT	1 MU	L	LRMP, IFPA, TSR, FDP	Mar-02	H	RIP	$0	0	$20,000	$0	$0	$0	$20,000	1

Notes		
	1	Regional Projects are itemized by Regional Issue Number as per the Matrix of CCFM Goals
	2	E = existing, N = new
	3	E = Organization, Analysis or Synthesis of Existing Info; U = Tools or Extension to Enhance Use of existing Info; N = Field Inventory or Research
	4	Reduction of risk to: E = Environmental values, T = timber resource values, NT = non-timber resource benefits. There can be more than one.
	5	# MU = # Forest Districts (Management Units) affected; R = Regional effect; P = Provincial effect
	6	S = short-term (< 5 yrs); L = Long term
	7	Strategic decision process for implementation of plans: SLUP (e.g., Regional, LRMP), TSR
	8	H = proven techniques; L = unproven techniques or methods
	9	RIP = FRBC Regional Investment Plan; RE = Research; HIP = FRBC HQ Investment Plan; CLUPE = Crown Land Use Planning & Extension

8.4.4 Bulkley Project Summary Table

Issue #	Proj #	Project Name	Proj Stat (E or N)	Type of Knowledge Investment (E, U or N)	Type of Benefit	Scope of Benefit (# MU, R, P)	Timing of Benefit (S or L)	Ability to use knowledge	Timing - when is completion req'd?	Prob. Of success (H,M,L)	Potential source of funding (RIP, RE, HIP, CLUPE)	Investment to date ($)	Invest ment to date (yrs)	$ req'd 2001-02	$ req'd 2002-03	$ req'd 2003-04	$ req'd 2004-05	$ Total (incl. Existing investment)	Total # Yrs to complete (incl. Yrs to date)
1			*2*	*3*	*4*	*5*	*6*	*7*		*8*	*9*								
Bu4	A	1:20k Fish Stream Inventories (PIR)	E	N,E	E,T,NT	1 MU	S,L	LUP,TSR	2002 / 2003	H	RIP	$88,000.00	3	$125,000.00	$60,000.00	na	na	$208,000.00	5
Bu4	B	Bulkley Fish and Fish Habitat Inventory (1:20k) (SCI)	E	N/E	E/T/NT	1	S/L	LRMP,TSR	2002-2003	H	RIP	$88,000.00	3	$60,000.00	$60,000.00	0.00	0.00	$208,000.00	5
Bu14	A	Telkwa Caribou	E	N	E,NT	2 MU	L	Bulk./Morice LUP	2004-2005	M	RIP	175,000.00	3	$75,000.00	$60,000.00	$50,000	$50,000	$410,000.00	7
Bu8	A	1:20k Level C Terrain Stability Mapping	E	N	E,T,NT	1 MU	S,L	TSR, LUP	Mar. 2003	H	RIP	?	3	$100,000.00	?	na	na	?	5
Bu3	A	PEM	E	E,U	E,T,NT	R	S,L	TSR,LUP	2002	H	RIP	$50,000.00	1	$45,000.00	na	na	na	$95,000.00	2
Bu11	A	Water Quality Monitoring	E	E,U	E,T,NT	1 MU	S,L	LUP	Indefinite	H	CRII,RIP	$10,000.00	1	$30,000.00	?	?	?	$40,000.00	10+
Bu6	A	Upper Elevation Operability Study	E	N	T	1 MU	S,L	TSR, LUP	2002	H	RIP	$80,000.00	1	$45,000.00	na	na	na	$125,000.00	2
Bu17	A	Babine Grizzly Bear Monitoring	N	N	E,T,NT	2 MU	S, L	Bulk./Kispiox LUP, TSR	Indefinite	H	RIP	0	0	$25,000	$25,000	$25,000	$25,000	$100,000	10+
Bu15	A	Caribou habitat alt. silvicultural trials	N	N	E,T,NT	2 MU	L	Bulk./Mor. LUP, TSR	2007	M?	RE	0	0	$90,000	$90,000	$20,000	$20,000	$220,000	10+
B13	A	Detailed AOA - Bulkley TSA (AIS Phase)	E	E,U,N	NT	1 MU	S,L	TSR, LUP	2002	M,H	RIP	$40,000	1	$35,000	0	0	0	$75,000	4
B10	A	Bark Beetle Inv. Assessments	N	N	E,T,NT	1 MU	S,L	TSR,LUP	Annually	M,H	RIP	$0	0	$50,000	$50,000	$50,000	$50,000	$200,000	4

Notes	***1***	Regional Projects are itemized by Regional Issue Number as per the Matrix of CCFM Goals
	2	E = existing, N = new
	3	E = Organization, Analysis or Synthesis of **E**xisting Info; U = Tools or Extension to Enhance **U**se of existing Info; N = Field Inventory or Research
	4	Reduction of risk to: E = Environmental values, T = timber resource values, NT = non-timber resource benefits. There can be more than one.
	5	# MU = # Forest Districts (Management Units) affected; R = Regional effect; P = Provincial effect
	6	S = short-term (< 5 yrs); L = Long term
	7	Strategic decision process for implementation of plans: SLUP (e.g., Regional, LRMP), TSR
	8	H = proven techniques; L = unproven techniques or methods
	9	RIP = FRBC Regional Investment Plan; RE = Research; HIP = FRBC HQ Investment Plan; CLUPE = Crown Land Use Planning & Extension

8.4.5 Cassiar Project Summary Table

Issue #	Proj #	Project Name	Proj Stat (E or N)	Type of Knowledge Investment (E, U or N)	Type of Benefit	Scope of Benefit (# MU, R, P)	Timing of Benefit (S or L)	Ability to use knowledge	Timing - when is completion req'd?	Prob. Of success (H,M,L)	Potential source of funding (RIP, RE, HIP, CLUPE)	Investment to date ($)	Invest ment to date (yrs)	$ req'd 2001-02	$ req'd 2002-03	$ req'd 2003-04	$ req'd 2004-05	$ Total (incl. Existing investment)	Total # Yrs to complete (incl. Yrs to date)
1			2	3	4	5	6	7		8	9								
C1	A	VRI (Imagery / Strata Height Adjustments) Dease - Liard	E	N	T	1 MU	S,L	TSR / LU	TSRIII	H	RIP	$50,000	2	$100,000	$100,000	$100,000	$100,000	$400,000	6
C4	A	Cassiar Caribou & Moose	E	N	E, T	1 MU,R,& P	s	FDP, TSR, RLUP, LRMP	2004	H	RIP	$900,000	5	$140,000	$90,000	$90,000	$0	$1,220,005	8
C2	A	VRI Phase I (Imagery / Inventory Trial / Strata Height Adjustments) Iskut / Stikine	E	N	T	1 MU	S,L	TSR / LU	TSRIII	H	RIP	$50,000	2	$100,000	$100,000	$100,000	$100,000	$400,000	6
C7	A	Bob Quinn Fisher	N	N	E, T	1 MU	S	FDP, TSR, RLUP, LRMP	-	H	RIP	$0	0	$65,000	$50,000	$50,000	$50,000	$215,000	4
C12	A	McBride Caribou	N	E	E,T	1 MU& R	S	TSR & LRMP	2003	H	RIP	$0	0	$15,000	$15,000	$0	$0	$30,000	2

Notes

1 Regional Projects are itemized by Regional Issue Number as per the Matrix of CCFM Goals
2 E = existing, N = new
3 E = Organization, Analysis or Synthesis of **E**xisting Info; U = Tools or Extension to Enhance **U**se of existing Info; N = Field Inventory or Research
4 Reduction of risk to: E = Environmental values, T = timber resource values, NT = non-timber resource benefits. There can be more than one.
5 # MU = # Forest Districts (Management Units) affected; R = Regional effect; P = Provincial effect
6 S = short-term (< 5 yrs); L = Long term
7 Strategic decision process for implementation of plans: SLUP (e.g., Regional, LRMP), TSR
8 H = proven techniques; L = unproven techniques or methods
9 RIP = FRBC Regional Investment Plan; RE = Research; HIP = FRBC HQ Investment Plan; CLUPE = Crown Land Use Planning & Extension

8.4.6 Kispiox Project Summary Table

Issue #	Proj #	Project Name	Proj Stat (E or N)	Type of Knowledge Investment (E, U or N)	Type of Benefit	Scope of Benefit (# MU, R, P)	Timing of Benefit (S or L)	Ability to use knowledge	Timing - when is completion req'd?	Prob. Of success (H,M,L)	Potential source of funding (RIP, RE, HIP, CLUPE)	Investment to date ($)	Investment to date (yrs)	$ req'd 2001-02	$ req'd 2002-03	$ req'd 2003-04	$ req'd 2004-05	$ Total (incl. Existing investment)	Total # Yrs to complete (incl. Yrs to date)
1			2	3	4	5	6	7		8	9								
Ki5	H01	Complete stream inventories	E	N	E, T, NT	Kispiox	L	TSR, LRMP, LUP	Now	H	RIP	$256,000	3	$125,000	$125,000	$125,000		$631,000	6
Ki6	H02	Development of Wildlife Habitat Suitability Model	E	U, E	E, T, NT	Kispiox	L	TSR, LRMP, IWMS, LUP	Dec-01	H	RIP	$15,000 (?)	1	$125,000				$140,000	2
Ki6	H03	Goshawk nest inventory	E	N, E	E, T, NT	P	L	TSR, LRMP, LUP, IWMS	2004	H	RIP	$527,000	3	$60,000	$60,000	$60,000		$707,000	6
Ki3	H04	Complete calibration of the index of biological integrity access tool	E	E	E, T, NT	R	L	LRMP, LUP	2002	M	RIP	?	1	$10,000				?	2
Ki1	H05	Acquisition of Satellite Imagery	N	E	E, T, NT	R	S	TSR, LRMP, LUP	Dec-01	H	MoF			$18,000		$18,000			n/a (2years cycles)
Ki2	H06	OGMA & WTP Analysis	N	E	E, T, NT	P	L	TSR, LRMP, LUP	2002	H	RIP			$20,000				$20,000	1
Ki2	H07	Complete PEM & CWD requirements	N	U, E	E, T, NT	Kispiox	L	TSR, LRMP, LUP	2002	M	RIP			$60,000	$15,000			$75,000	1
Ki4	H08	Acquire new aerial photos (1:15,000)	N	N	E, T, NT	Kispiox	S	TSR, LRMP, LUP	2002	Depends on MoF				$200,000	$200,000 (if photos not available summer2001)			$200,000	1
Ki2	H09	Assessment of Seral Stage & Patch Size Distribution	N	E	E, T, NT	Kispiox	L	TSR, LRMP, LUP	2002	H	RIP			$20,000				$20,000	1
Ki6	H10	Develop a Wildlife Habitat Supply Model	N	U, E	E, T, NT	Kispiox	L	TSR, LRMP, LUP, IWMS	2003	M	RIP				$30,000	$30,000		$60,000	2
KI9	H11	Determine location of the Telegraph	N	N	NT	Kispiox	L	LRMP, LUP	2002	H				$25,000	$25,000			$50,000	2

Issue #	Proj #	Project Name	Proj Stat (E or N)	Type of Knowledge Investment (E, U or N)	Type of Benefit	Scope of Benefit (# MU, R, P)	Timing of Benefit (S or L)	Ability to use knowledge	Timing - when is completion req'd?	Prob. Of success (H,M,L)	Potential source of funding (RIP, RE, HIP, CLUPE)	Investment to date ($)	Invest ment to date (yrs)	$ req'd 2001-02	$ req'd 2002-03	$ req'd 2003-04	$ req'd 2004-05	$ Total (incl. Existing investment)	Total # Yrs to complete (incl. Yrs to date)
1			*2*	*3*	*4*	*5*	*6*	*7*		*8*	*9*								
		Trail																	
Ki7	H12	Development of Botanical Forest Product Habitat Model	N	N, U, E	E, T, NT	R	L	TSR, LRMP, LUP	2003	L	RIP				$60,000	$20,000		$80,000	2
Ki9	H13	Recreation Strategic Plan	N	E	E, NT	Kispiox	L	LRMP, LUP	2001	H				$15,000				$15,000	1
Ki2	H14	Develop a Structural Stage Model	N	U, E	E, T, NT	Kispiox	L	TSR, LRMP, LUP	2004	L	RIP				$60,000	$15,000		$75,000	2

Notes	***1***	Regional Projects are itemized by Regional Issue Number as per the Matrix of CCFM Goals
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	4	Reduction of risk to: E = Environmental values, T = timber resource values, NT = non-timber resource benefits. There can be more than one.
	5	# MU = # Forest Districts (Management Units) affected; R = Regional effect; P = Provincial effect
	6	S = short-term (< 5 yrs); L = Long term
	7	Strategic decision process for implementation of plans: SLUP (e.g., Regional, LRMP), TSR
	8	H = proven techniques; L = unproven techniques or methods
	9	RIP = FRBC Regional Investment Plan; RE = Research; HIP = FRBC HQ Investment Plan; CLUPE = Crown Land Use Planning & Extension

8.4.7 Kalum Project Summary Table

Issue #	Proj #	Project Name	Proj Stat (E or N)	Type of Knowledge Investment (E, U or N)	Type of Benefit	Scope of Benefit (# MU, R, P)	Timing of Benefit (S or L)	Ability to use knowledge	Timing - when is completion req'd?	Prob. Of success (H,M,L)	Potential source of funding (RIP, RE, HIP, CLUPE)	Investment to date ($)	Invest ment to date (yrs)	$ req'd 2001-02	$ req'd 2002-03	$ req'd 2003-04	$ req'd 2004-05	$ Total (incl. Existing investment)	Total # Yrs to complete (incl. Yrs to date)
1			2	3	4	5	6	7		8	9								
Ka1	A	Data warehousing	N	E, U	E,T, NT	Kalum, R	S, L	TSR, LRMP, FDP	2002	H	HIP, RIP	$0	0	$30,000	$0	$0	$0	$30,000	1
Ka2	A	Growth and Yield plots	E, N	N	E, T, NT	Kalum	L	TSR, LRMP, FDP	2002	M	RIP	$0	0	$70,000	$0	$0	$0	$70,000	1
Ka3	A	Aerial photography	N	N	E, T, NT	Kalum	S, L	TSR, LRMP, FDP	2002	M	RIP	$0	0	$150,000	$0	$0	$0	$150,000	1
Ka7	A	Recreational inventory	N	E, U	E, NT	Kalum	S, L	LRMP, TSR	2003	M	RIP	$0	0	$55,000	$80,000	$0	$0	$135,000	2
Ka8	A	Grizzly bear habitat mapping and critical habitats	N	E, U, N	E, T, NT	Kalum	S, L	LRMP, TSR, FDP	2003	H	RIP	$0	0	$25,000	$45,000	$0	$0	$70,000	2
Ka9	A	Ungulate winter range	N	E, U, N	E, T, NT	Kalum	S, L	LRMP, TSR, FDP	2003	H	RIP	$0	0	$45,000	$45,000	$0	$0	$90,000	2
Ka12	A	High productivity zones: timber supply and biodiversity	N	E, U, N	E, T, NT	Kitimat and Skeena valleys	S, L	LRMP, TSR	2005	M	RIP	$0	0	$25,000	$25,000	$35,000	$35,000	$120,000	4
Ka13	A	Pine mushroom capability	N	E, U, N	E, NT	Kalum	S, L	LRMP, TSR, FDP	2003	H	RIP	$0	0	$20,000	$20,000	$0	$0	$40,000	2
Ka14	A	Small wood utilization	N	E, U, N	E, T,	Kalum	L	LRMP, TSR, FDP	2003	H	RIP	$0	0	$35,000	$35,000	$0	$0	$70,000	2
Ka15	A	Hardwood mgmt strategy	N	E, U, N	E, T, NT	Kalum	L	LRMP, TSR, FDP	2003	H	RIP	$0	0	$40,000	$40,000	$0	$0	$80,000	2
Ka 16	A	Partial cutting strategy	N	E, U, N	E, T, NT	Kalum	L	LRMP, TSR, FDP	2003	H	RIP	$0	0	$40,000	$30,000	$0	$0	$70,000	2
Ka17	A	Red and blue listed Plant communs.	N	E, N	E, NT	Skeena valley; Dala/Kildala	L	LRMP, TSR, FDP	2003	H	RIP	$0	0	$45,000	$35,000	$0	$0	$80,000	2
Ka18	A	Skeena Valley Moose	N	N	E, NT	Skeena Valley	S	LRMP	2002	H	RIP	$0	0	$65,000	$0	$0	$0	$65,000	1
Ka19	A	PEM	E	E, U, N	E, T, NT	Kalum	S, L	LRMP, TSR, FDP	2003	H	RIP	?	1	$75,000	$35,000	$0	$0	?	2

Issue #	Proj #	Project Name	Proj Stat (E or N)	Type of Knowledge Investment (E, U or N)	Type of Benefit	Scope of Benefit (# MU, R, P)	Timing of Benefit (S or L)	Ability to use knowledge	Timing - when is completion req'd?	Prob. Of success (H,M,L)	Potential source of funding (RIP, RE, HIP, CLUPE)	Investment to date ($)	Invest ment to date (yrs)	$ req'd 2001-02	$ req'd 2002-03	$ req'd 2003-04	$ req'd 2004-05	$ Total (incl. Existing investment)	Total # Yrs to complete (incl. Yrs to date)
1			*2*	*3*	*4*	*5*	*6*	*7*		*8*	*9*								
Ka20	A	TRIM-2	E	N	E, T, NT	Kalum	L	LRMP, TSR, FDP	2002	H	RIP	?	1	$70,000	$0	$0	$0	?	2
Ka21	A	TEM upgrade	E	E, U,	E, T, NT	Portion of Kalu TSA	L	LRMP, TSR, FDP	2002	H	RIP	0	0	$30,000	$0	$0	$0	$30,000	1
Ka22	A	FFHI - Buffalohead (West Fraser)	E	N	E, T, NT	Buffalo head charts	L	TSR, FDP	2002	H	RIP	?	?	?	?	?	?	?	?
Ka22	B	FFHI - Nass TSA (SCI)	E	N	E, T, NT	Nass TSA	L	TSR, FDP	2002	H	RIP	?	?	$150,000	$0	$0	$0	?	?
Ka22	C	FFHI - Kalum TSA (SCI)	E	N	E,T,NT	Kalum TSA	L	TSR, FDP	2002	H	RIP	?	?	$420,000	$0	$0	$0	$420,000	?
Ka23	A	TSM	E	N	E, T, NT	?	L	TSR, FDP	?	?	?	?	?	?	?	?	?	?	?
Ka24	A	Operational Trials & Sites	E	E, U,	E, T, NT	Kalum	L	LRMP, TSR, FDP	?	?	?	?	?	?	?	?	?	?	?

Notes		
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	2	E = existing, N = new
	3	E = Organization, Analysis or Synthesis of Existing Info; U = Tools or Extension to Enhance Use of existing Info; N = Field Inventory or Research
	4	Reduction of risk to: E = Environmental values, T = timber resource values, NT = non-timber resource benefits. There can be more than one.
	5	# MU = # Forest Districts (Management Units) affected; R = Regional effect; P = Provincial effect
	6	S = short-term (< 5 yrs); L = Long term
	7	Strategic decision process for implementation of plans: SLUP (e.g., Regional, LRMP), TSR
	8	H = proven techniques; L = unproven techniques or methods
	9	RIP = FRBC Regional Investment Plan; RE = Research; HIP = FRBC HQ Investment Plan; CLUPE = Crown Land Use Planning & Extension

8.4.8 North Coast Project Summary Table

Issue #	Proj #	Project Name	Proj Stat (E or N)	Type of Knowledge Investment (E, U or N)	Type of Benefit	Scope of Benefit (# MU, R, P)	Timing of Benefit (S or L)	Ability to use knowledge	Timing - when is completion req'd?	Prob. Of success (H,M,L)	Potential source of funding (RIP, RE, HIP, CLUPE)	Investment to date ($)	Invest ment to date (yrs)	$ req'd 2001-02	$ req'd 2002-03	$ req'd 2003-04	$ req'd 2004-05	$ Total (incl. Existing investment)	Total # Yrs to complete (incl. Yrs to date)
1			*2*	*3*	*4*	*5*	*6*	*7*		*8*	*9*								
NC-01	A	HyP3	E	N	E,T,NT	1,R,P	S	SLUP\TSR	2001	H	RE/RIP	64,375	3	43,570	21,500	18,900	0	84,150	3
NC-02	A	PEM Calibration	E	N	E,T,NT	1,R,P	S	SLUP\TSR	2001	H	RE/RIP	87,650	3	92,950	11,100	0	0	104,050	2
NC-03	A	SIBEC 2	E	N	E,T	1,R,P	S	SLUP\TSR	2001	H	RE/RIP	79,750	1	41,210	0	0	0	41,210	1
NC-04	A	Riparian Impact Review	N	U	E,T,NT	1	S	SLUP/TSR	2001	H	RIP	0	0	40,000	58,500	0	0	98,500	2
NC-05	A	VLI-Final	E	E	T,NT	1	S	SLUP\TSR	2001	H	RIP	44,000	1	7,600	0	0	0	7,600	1
NC-06	A	TUS-AOA Integration	E	U	E,T,NT	1	S	SLUP\TSR	2001	H	RIP	38,000	1	74,700	64,800	82,300	0	221,800	3
NC-07	A	N.C. Murrelet Study	E	N	NT	2	S	SLUP/TSR	2002	H	RIP,RE	0	0	75,000	0	0	0	75,000	1(2)
NC-08 TFL	A	MAMU Study	E	E	E	TFL25	S	TSR	2003	H	RIP	130,000	1	20,000	20,000	0	0	170,000	3
NC-09 TFL	A	Kermode Study	E	N	E	TFL25	S	SLUP	2002	H	RIP	100,000	3	30,000	0	0	0	130,000	4
NC-10 TFL	A	VRI	E	N	T	TFL25	S	TSR	2004	H	RIP	60,000	1	200,000	200,000	200,000	0	660,000	4
NC-12	A	Karst Field Reconnaissance	N	N	NT	2	S	SLUP/TSR	2001	H	RIP	0	0	35,000	0	0	0	35,000	1
NC-13	A	N.C Log Dump Assess.	N	U/N	E/NT	1	S	SLUP/TSR	2002	H	RIP,CLUPE	0	0	40,000	0	0	0	40,000	1
NC-14	A	Ungulate Habitat Assess.	N	N	NT	1	S	SLUP/TSR	2002	H	RIP,CLUPE	0	0	50,000	30,000	0	0	50,000	1(2)
NC-15 TFL/T SA	A	Fertilization Feasibility Study	N	E	T	2	L	TSR	2002	H	RIP	0	0	30,000	225,000	225,000	30	510,000	4
NC-01	B	Ecological Operability Modelling / THLB	E	U,E	E,T,NT	1,R	S	SLUP\TSR	2002	H	RE/RIP	64,375	3	0	23,200	9,500	0	33,200	2
NC-01	C	Air Photos	N	U	T	1	L	SLUP\TSR	2002	H	RIP	0	0	0	110,000	110,000	0	220,000	2
NC-18	A	Critical G. Bear Habitat Inventory	N	N	NT	2	S	SLUP/TSR	2002	H	RIP	0	0	80,000	0	0	0	80,000	1
NC-19	A	Biodiversity Risk Assessment	N	E	NT	2	S	SLUP/TSR	2002	H	RIP	0	0	50,000	0	0	0	50,000	1
NC-14	B	Mountain Goat Pop. inventory	N	N	NT	2	S	SLUP/TSR	2002	h	RIP	0	0	100,000	0	0	0	100,000	1

Issue #	Proj #	Project Name	Proj Stat (E or N)	Type of Knowledge Investment (E, U or N)	Type of Benefit	Scope of Benefit (# MU, R, P)	Timing of Benefit (S or L)	Ability to use knowledge	Timing - when is completion req'd?	Prob. Of success (H,M,L)	Potential source of funding (RIP, RE, HIP, CLUPE)	Investment to date ($)	Invest ment to date (yrs)	$ req'd 2001-02	$ req'd 2002-03	$ req'd 2003-04	$ req'd 2004-05	$ Total (incl. Existing investment)	Total # Yrs to complete (incl. Yrs to date)
1			*2*	*3*	*4*	*5*	*6*	*7*		*8*	*9*								
NC-20	A	Tailed Frog Predictive Mapping	N	N	NT	2	S	SLUP/TSR	2002	H	RIP	0	0	5,000	0	0	0	5,000	1
NC-20	B	Tailed Frog Field Recce and BMP	N	N	NT	2	S	TSR	2002	H	RIP	0	0	80,000	0	0	0	80,000	1
NC-21	A	Goshawk GIS analysis	N	N	NT	2	S	TSR	2002	H	RIP	0	0	35,000	0	0	0	35,000	1
NC-21	B	Goshawk Call Playback	N	N	NT	2	S	TSR	2002	H	RIP	0	0	120,000	120,000	100,000	0	340,000	3
NC-21	C	Goshawk Training and Educational Material	N	N	NT	2	S	TSR	2002	H	RIP	0	0	8,000	0	0	0	8,000	1
NC-22	A	Steelhead and cutthroat recce.	N	N	NT	2	S	TSR	2002	H	RIP	0	0	80,000	0	0	0	80,000	1
NC-26	A	TSM Level C	N	N	E	1	S	TSR	2002	H	RIP,CLUPE	0	0	50,000	50,000	50,000	50,000	200,000	4

Notes

1 Regional Projects are itemized by Regional Issue Number as per the Matrix of CCFM Goals
2 E = existing, N = new
3 E = Organization, Analysis or Synthesis of Existing Info; U = Tools or Extension to Enhance Use of existing Info; N = Field Inventory or Research
4 Reduction of risk to: E = Environmental values, T = timber resource values, NT = non-timber resource benefits. There can be more than one.
5 # MU = # Forest Districts (Management Units) affected; R = Regional effect; P = Provincial effect
6 S = short-term (< 5 yrs); L = Long term
7 Strategic decision process for implementation of plans: SLUP (e.g., Regional, LRMP), TSR
8 H = proven techniques; L = unproven techniques or methods
9 RIP = FRBC Regional Investment Plan; RE = Research; HIP = FRBC HQ Investment Plan; CLUPE = Crown Land Use Planning & Extension

8.5 Research Priorities

Research priorities have yet to be differentiated from other issues and priorities.

8.6 Provincial Priorities

After reviewing each Regional SSFM submission, provincial priorities need to be determined at a planning session that would involve determining common issues in a more global context.

8.7 Transition Projects

No projects have as yet been identified as transitional.

8.8 SSFM APPENDICES

A. MANAGEMENT UNIT RMP CONTACT AND SUPPORT PERSONNEL

The RMP Contacts for the Prince Rupert / Skeena Regions include:

- Ruth Edwards, Ministry of Forests, Prince Rupert Forest Region
- Don Reid, Ministry of Environment, Skeena Region
- Vicky Bosse, Ministry of Forests, North Coast Forest District
- Marek Wasckiewicz, Ministry of Forests, Kalum Forest District
- Agathe Bernard, Ministry of Forests, Kispiox Forest District
- Bob Copley, Ministry of Forests, Bulkley Forest District
- Mike Buirs, Ministry of Forests, Morice Forest District
- Mark Price, Ministry of Forests, Lakes Forest District

Key people involved in the SSFM process included:

- Regional Strategic Team

Jim Snetsinger –Ministry of Forests, Prince Rupert Forest Region
Mike Dunbar –Houston Forest Products Company, Houston, BC
Dan Tuomi –Skeena Cellulose Inc., Smithers, BC

- Advisory

Don Gosnell – Ministry of Forests, Prince Rupert Forest Region
Butch Morningstar – Forest Renewal BC, Skeena-Bulkley Region
Glenn Farenholtz – forestry consultant, facilitator

- Regional Planning Team

Don Gosnell –Ministry of Forests, Prince Rupert Forest Region
Don Reid – BC Ministry of Environment, Skeena Region
Carl Vandermark, Canfor, Houston, BC
Hubert Burger, Ministry of Forests, Prince Rupert Forest Region
Archie MacDonald, Skeena Cellulose Inc., Terrace, BC
Ruth Edwards, Ministry of Forests, Prince Rupert Forest Region
Ian Sharpe, Ministry of Environment, Skeena Region
Doug Steventon/Dave Wilford, Ministry of Forests, Prince Rupert Forest Region
Linda Robertson, Ministry of Forests, Prince Rupert Forest Region
Paul Giroux, Ministry of Environment, Skeena Region
Darren Fillier, Ministry of Environment, Kispiox Forest District
Jane Lloyd-Smith, Ministry of Forests, Bulkley Forest District
Glenn Farenholtz, forestry consultant, facilitator

B. REFERENCES SUPPORTING SSFM COMPONENT

Canadian Standards Association, *A Sustainable Forest Management System: Guidance Document,* © Canadian Standards Association 1996, ISSN 0317-5669, 33 pp.

Forest Renewal BC, *Strengthening Sustainable Forest Management, Term: 1999-2004*, © FRBC 2000, C. Alexander, editor.

Forest Renewal BC, *Resource Management Plan for Strengthening Sustainable Forest Management Guidelines*, © FRBC 2000, C. Alexander, editor.

9.0 FOREST RESOURCES INVENTORIES (FRI)

This planning document has merit in outlining inventory needs largely outside the scope of Forest Renewal BC activities. Prince Rupert Forest Region (PRFR) and the Ministry of Environment, Lands and Parks (MELP) Skeena Region Fish and Wildlife staff feel that its value depends on (a) substantial revisions to the Table 2 format, which is now too synoptic and lacking in detail, (b) it becoming an annually reviewed document, to which changes can be made, and (c) it being linked to planning processes in other Ministries (e.g., the Ministry of Aboriginal Affairs) that control much of the funding available for the identified inventories.

The following tables include all inventories that are fundable both by Forest Renewal and other sources. The only reason for completing inventories is to "strengthen sustainable forest and land management". The recommendation is therefore to make the SSFM section of the RMPs all encompassing in future years.

MELP has completed tables for all inventories that are within their mandate by district. There may be overlap and inconsistency between these tables and those produced by each district. These inconsistencies will be dealt with over the following year.

9.1 *FRI--MELP*

9.1.1 Information Tables

Skeena Region: Identified Fisheries Issues and Projects

Forest Resources Inventory, Resources Management Plan, 2000/01

Last Update: Sept. 6, 2000

Watershed/Waterbody	MoF District	Species	Inventory Rationale/ Business Driver	Inventory Type	Relative Priority
Chapman L.	Bulkley	LT	BCE Act; Regs; Cnsrv, LRMP Imp;	CRL;SI	C
Sustut R.	Ft. St. James	SST	BCE Act; Regs; Cnsrv; LRMP Imp.	SI	C
Kispiox R.	Kispiox	SST	BCE Act; Regs; Cnsrv, LRMP Imp; Sect. 35	SI; CRL	C
Toboggan C.	Bulkley	SST	BCE Act; Regs; Cnsrv; LRMP Devl; LRMP Imp.	SI	C
Morice R.	Morice	BT	BCE Act; Regs; Cnsrv; IWMS; LRMP Devl.	SI;CRL	C
Babine R. & tribs	Morice/Bulkley/Kispiox	BT	BCE Act; Regs; Cnsrv; IWMS; LRMP Imp.	SI	C
Nass R. & tribs	NC, Kalum, Kispiox	SST	BCE Act; Regs; Cnsrv, LRMP Devl, FNT Imp	SI; FN Hrvst;	C
Iskut R. & Craig R.	Cassair	SST	BCE Act; Regs; Cnsrv; LRMP Devl.	SI	VH
Atlin L.	Cassiar	LT	BCE Act; Regs; Cnsrv;	SI;CRL	VH
Tagish L	Cassiar	LT	BCE Act; Regs; Cnsrv;	SI;CRL	VH
Taku R. & tribs	Cassiar	all	BCE Act; Regs; Cnsrv;	1:50k	VH
Taku R. & tribs	Cassiar	SST	BCE Act; Regs; Cnsrv;	SI	VH
Teslin L.	Cassiar	LT	BCE Act; Regs; Cnsrv;	SI; CRL	VH
Kitimat R.	Kalum	WST	BCE Act; Regs; Cnsrv, LRMP Devl	SI; CRL	VH
Skeena River & tribs	Kispiox/Bulkley/Morice/Ft.St.James	SST(Juv)	BCE Act; Regs; Cnsrv; LRMP Devl; LRMP Imp.	SI	VH
Tchesinkut L.	Lakes	LT	BCE Act; Regs; Cnsrv; LRMP Devl.	SI;CRL	VH
Fulton L.	Morice	LT	BCE Act; Regs; Cnsrv; LRMP Devl.	SI	VH
Morrison L.	Morice	LT	BCE Act; Regs; Cnsrv; LRMP Devl.	SI	VH
Tochcha L.	Morice	LT	BCE Act; Regs; Cnsrv; LRMP Devl.	SI	VH
Canoona R.	N.Coast	WST	BCE Act; Regs; Cnsrv, LRMP Devl	SI	VH
Kloyia R.	N.Coast	WST	BCE Act; Regs; Cnsrv, LRMP Devl	SI, CRL	VH
Princess Royal Island Tribs	N.Coast	WST	BCE Act; Regs; Cnsrv, LRMP Devl	SI	VH
Triumph R.	N.Coast	WST	BCE Act; Regs; Cnsrv, LRMP Devl	SI	VH
Work Channel Tribs	N.Coast	WST	BCE Act; Regs; Cnsrv, LRMP Devl	SI	VH
Yakoun R.	QCI	WST	BCE Act; Regs; Cnsrv	CRL; SI	VH
Road Accessed Lakes Assessment	Region	RB/CT/LT/WF	BCE Act; Regs; Cnsrv; LRMP Devl.; LRMP Imp.	SI	VH
Bulkley R.	Bulkley	BT	BCE Act; Regs; Cnsrv; IWMS	SI	H
Alsek R.	Cassiar	WST/SST	BCE Act; Regs; Cnsrv;	SI	H
Dease R.	Cassiar	all	BCE Act; Regs; Cnsrv;	1:50k	H
Dease R.	Cassiar	GR	BCE Act; Regs; Cnsrv;	SI	H
Jennings R.	Cassiar	all	BCE Act; Regs; Cnsrv;	1:50k	H
Rancheria R.	Cassiar	all	BCE Act; Regs; Cnsrv;	1:50k	H
Small Lakes Inventory	Cassiar	NP/LT/WF/GR/BT	BCE Act; Regs; Cnsrv; IWMS; LRMP Devl.	1:20k	H
Swift R.	Cassiar	all	BCE Act; Regs; Cnsrv;	1:50k	H
Swift R.	Cassiar	BT	BCE Act; Regs; Cnsrv;	SI	H
Swift R.	Cassiar	GR	BCE Act; Regs; Cnsrv;	SI	H
Teslin R.	Cassiar	all	BCE Act; Regs; Cnsrv; LRMP Dev.	1:50k	H
Teslin R.	Cassiar	GR	BCE Act; Regs; Cnsrv; LRMP Dev.	SI	H
Teslin R.	Cassiar	BT	BCE Act; Regs; Cnsrv; LRMP Dev.	SI	H
Yukon R.	Cassiar	all	BCE Act; Regs; Cnsrv; LRMP Dev.	1:50k	H
Yukon R.	Cassiar	GR	BCE Act; Regs; Cnsrv; LRMP Dev.	SI	H
Yukon R.	Cassiar	BT	BCE Act; Regs; Cnsrv; LRMP Dev.	SI	H
Kitimat R.	Kalum	ACT	BCE Act; Regs; Cnsrv, LRMP Devl	SI; CRL	H
Lake Else R.	Kalum	ACT/CT	BCE Act; Regs; Cnsrv, LRMP Devl	SI, CRL	H
Kispiox R.	Kispiox	BT	BCE Act; Regs; Cnsrv; IWMS; LRMP Imp	SI	H
Nanika R.	Morice	BT	BCE Act; Regs; Cnsrv; IWMS;	SI	H

Watershed/Waterbody	MoF District	Species	Inventory Rationale/ Business Driver	Inventory Type	Relative Priority
			LRMP Devl.		
Yakoun R.	QCI	ACT	BCE Act; Regs; Cnsrv	CRL; SI	H
Genetic & Morphometric Stock ID	Region	SST & WST	BCE Act; Regs; Cnsrv;	SI	H
Bulkley R.	Bulkley	SST	BCE Act; Regs; Cnsrv, LRMP Imp;	SI	M
Nilkitkwa L.	Bulkley	RB	BCE Act; Regs; Cnsrv, LRMP Imp;	CRL	M
Atlin L.	Cassiar	LW	BCE Act; Regs; Cnsrv;	SI;CRL	M
Chukachida R.	Cassiar	all	BCE Act; Regs; Cnsrv; LRMP Devl.	1:50k	M
Iskut R. (UISR)	Cassiar	all	BCE Act; Regs; Cnsrv; LRMP Devl.	1:50k	M
Mess C.	Cassiar	all	BCE Act; Regs; Cnsrv; LRMP Devl.	1:50k	M
Morchuea L.	Cassiar	RB	BCE Act; Regs; Cnsrv;	SI	M
Pitman R.	Cassiar	all	BCE Act; Regs; Cnsrv; LRMP Devl.	1:50k	M
Spatzizi R.	Cassiar	all	BCE Act; Regs; Cnsrv; LRMP Devl.	1:50k	M
Stikine R.	Cassiar	all	BCE Act; Regs; Cnsrv; LRMP Devl.	1:50k	M
Teslin L.	Cassiar	LW	BCE Act; Regs; Cnsrv;	SI; CRL	M
Whiting R.	Cassiar	WST/SST	BCE Act; Regs; Cnsrv;	SI	M
Bell L.	Kalum	RB	BCE Act; Regs; Cnsrv, LRMP Devl	SI	M
Kalum R.	Kalum	WST	BCE Act; Regs; Cnsrv, LRMP Devl	SI, CRL	M
Kalum R.	Kalum	ACT/CT	BCE Act; Regs; Cnsrv, LRMP Devl	SI	M
Kalum R.	Kalum	SST	BCE Act; Regs; Cnsrv, LRMP Devl	SI	M
Kalum R.	Kalum	BT	BCE Act; Regs; Cnsrv; LRMP Devl; IWMS	SI	M
Kwinageese R.	Kalum	SST	BCE Act; Regs; Cnsrv, LRMP Devl	SI	M
Kwinageese R.	Kalum	BT	BCE Act; Regs; Cnsrv; LRMP Devl; IWMS	SI	M
Lake Else R.	Kalum	WST	BCE Act; Regs; Cnsrv, LRMP Devl	SI, CRL	M
Lake Else R.	Kalum	SST	BCE Act; Regs; Cnsrv, LRMP Devl	SI	M
Oweegee C. watershed	Kalum	SST	BCE Act; Regs; Cnsrv, LRMP Devl	SI; CRL	M
Oweegee C. watershed	Kalum	BT	BCE Act; Regs; Cnsrv; LRMP Devl; IWMS	SI; CRL	M
Zymoetz R.	Kalum	WST	BCE Act; Regs; Cnsrv, LRMP Devl	SI; CRL	M
Zymoetz R.	Kalum	SST	BCE Act; Regs; Cnsrv, LRMP Devl	SI	M
Zymoetz R.	Kalum	ACT/CT	BCE Act; Regs; Cnsrv, LRMP Devl	SI	M
Derrick L.	Kispiox	RB	BCE Act; Regs; Cnsrv, LRMP Devl	SI	M
Kitseguecla R.	Kispiox	SST	BCE Act; Regs; Cnsrv, LRMP Imp; Sect 35	SI	M
Kitseguecla R.	Kispiox	BT	BCE Act; Regs; Cnsrv; IWMS	SI	M
Kitwanga R.	Kispiox	SST	BCE Act; Regs; Cnsrv, LRMP Imp; Sect 35	SI	M
Kitwanga R.	Kispiox	BT	BCE Act; Regs; Cnsrv; IWMS	SI	M
Cranberry R.	Kispiox/Kalum	SST	BCE Act; Regs; Cnsrv, LRMP Imp; Sect 35	SI; CRL	M
Cranberry R.	Kispiox/Kalum	BT	BCE Act; Regs; Cnsrv; IWMS	SI	M
Takysie L.	Lakes	RB	BCE Act; Regs; Cnsrv; LRMP Devl.	SI;CRL	M
Little Bulkley R.	Morice	SST	BCE Act; Regs; Cnsrv	SI	M
Morice R.	Morice	SST	BCE Act; Regs; Cnsrv; LRMP Devl.	SI;CRL	M
Nanika R.	Morice	SST	BCE Act; Regs; Cnsrv; LRMP Devl.	SI	M
Tagetochlain L.	Morice	LT	BCE Act; Regs; Cnsrv; LRMP Devl.	CRL;SI	M
Babine L.	Morice/Bulkley	LT	BCE Act; Regs; Cnsrv; LRMP Imp.	CRL;SI	M
Babine L.	Morice/Bulkley	RB	BCE Act; Regs; Cnsrv; LRMP Imp.	CRL;SI	M
Babine L.	Morice/Bulkley	WF	BCE Act; Regs; Cnsrv; LRMP Imp.	CRL;SI	M
Babine L.	Morice/Bulkley	BT(?)	BCE Act; Regs; Cnsrv; IWMS; LRMP Imp.	CRL;SI	M
Babine R.	Morice/Bulkley	SST	BCE Act; Regs; Cnsrv; LRMP Imp.		M
Nechako Reservoir	Morice/Lakes	LT	BCE Act; Regs; Cnsrv; LRMP Devl.	SI	M
Canoona R.	N.Coast	ACT	BCE Act; Regs; Cnsrv, LRMP Devl	SI	M
Chambers C.	N.Coast	WST	BCE Act; Regs; Cnsrv, LRMP Devl, FNT Imp	SI; FN Hrvst;	M
Ishkheenickh R.	N.Coast	WST	BCE Act; Regs; Cnsrv, LRMP Devl, FNT Imp	SI; FN Hrvst;	M
Kincolith R.	N.Coast	WST	BCE Act; Regs; Cnsrv, LRMP Devl, FNT Imp	SI; FN Hrvst;	M
Kwinamass R.	N.Coast	WST	BCE Act; Regs; Cnsrv, LRMP Devl, FNT Imp	SI; FN Hrvst;	M
Princess Royal Island Tribs	N.Coast	ACT	BCE Act; Regs; Cnsrv, LRMP Devl	SI	M
Triumph R.	N.Coast	ACT	BCE Act; Regs; Cnsrv, LRMP Devl	SI	M

Watershed/Waterbody	MoF District	Species	Inventory Rationale/ Business Driver	Inventory Type	Relative Priority
Work Channel Tribs	N.Coast	ACT	BCE Act; Regs; Cnsrv, LRMP Devl	SI	M
Braverman C.	QCI	WST	BCE Act; Regs; Cnsrv	CRL; SI	M
Braverman C.	QCI	ACT	BCE Act; Regs; Cnsrv	CRL; SI	M
Copper C.	QCI	WST	BCE Act; Regs; Cnsrv	CRL; SI	M
Copper C.	QCI	ACT	BCE Act; Regs; Cnsrv	CRL; SI	M
Davidson R.	QCI	WST	BCE Act; Regs; Cnsrv	CRL; SI	M
Davidson R.	QCI	ACT	BCE Act; Regs; Cnsrv	CRL; SI	M
Deena C.	QCI	WST	BCE Act; Regs; Cnsrv	CRL; SI	M
Deena C.	QCI	ACT	BCE Act; Regs; Cnsrv	CRL; SI	M
Hanna C.	QCI	WST	BCE Act; Regs; Cnsrv	CRL; SI	M
Hanna C.	QCI	ACT	BCE Act; Regs; Cnsrv	CRL; SI	M
Maman R.	QCI	WST	BCE Act; Regs; Cnsrv	CRL; SI	M
Maman R.	QCI	ACT	BCE Act; Regs; Cnsrv	CRL; SI	M
Mathers R.	QCI	WST	BCE Act; Regs; Cnsrv	CRL; SI	M
Mathers R.	QCI	ACT	BCE Act; Regs; Cnsrv	CRL; SI	M
Naden C.	QCI	WST	BCE Act; Regs; Cnsrv	CRL; SI	M
Naden C.	QCI	ACT	BCE Act; Regs; Cnsrv	CRL; SI	M
Pallant C.	QCI	WST	BCE Act; Regs; Cnsrv	CRL; SI	M
Pallant C.	QCI	ACT	BCE Act; Regs; Cnsrv	CRL; SI	M
Skdanz C.	QCI	WST	BCE Act; Regs; Cnsrv	CRL; SI	M
Skdanz C.	QCI	ACT	BCE Act; Regs; Cnsrv	CRL; SI	M
Tlell R.	QCI	WST	BCE Act; Regs; Cnsrv	CRL; SI	M
Tlell R.	QCI	ACT	BCE Act; Regs; Cnsrv	CRL; SI	M
Yakoun R.	QCI	ADV	BCE Act; Regs; Cnsrv	CRL; SI	M
Fisheries Information Summary, Compliation & Interpretation by watershed	Region	all species	BCE Act; Regs; Cnsrv; LRMP Devl.	Framework	M
Nakinilerack L.	Vanderhoof	LT	BCE Act; Regs; Cnsrv;	CRL;SI	M
Suskwa R.	Bulkley	SST	BCE Act; Regs; Cnsrv, LRMP Imp;	CRL	L
Suskwa R.	Bulkley	BT	BCE Act; Regs; Cnsrv; IWMS; LRMP Imp.	SI	L
Dease R.	Cassiar	BT	BCE Act; Regs; Cnsrv;	SI	L
Dease R.	Cassiar	IN(?)	BCE Act; Regs; Cnsrv;	SI	L
Teslin L.	Cassiar	IN	BCE Act; Regs; Cnsrv;	SI; CRL	L
Teslin R.	Cassiar	NP	BCE Act; Regs; Cnsrv;	SI	L
Teslin R.	Cassiar	IN	BCE Act; Regs; Cnsrv;	SI	L
Yukon R.	Cassiar	NP	BCE Act; Regs; Cnsrv;	SI	L
Yukon R.	Cassiar	IN	BCE Act; Regs; Cnsrv;	SI	L
Kitimat R.	Kalum	ADV	BCE Act; Regs; Cnsrv, LRMP Devl	SI; CRL	L
Sutherland R.	Lakes	RB	BCE Act; Regs; Cnsrv; LRMP Imp.	SI	L
Canoona R.	N.Coast	ADV	BCE Act; Regs; Cnsrv, LRMP Devl	SI	L
Chambers C.	N.Coast	ACT	BCE Act; Regs; Cnsrv, LRMP Devl	SI; FN Hrvst;	L
Chambers C.	N.Coast	ADV	BCE Act; Regs; Cnsrv, LRMP Devl	SI; FN Hrvst;	L
Ishkheenickh R.	N.Coast	ACT	BCE Act; Regs; Cnsrv, LRMP Devl	SI; FN Hrvst;	L
Ishkheenickh R.	N.Coast	ADV	BCE Act; Regs; Cnsrv, LRMP Devl	SI; FN Hrvst;	L
Khatada L.	N.Coast	RB	BCE Act; Regs; Cnsrv, LRMP Devl	SI	L
Khatada L.	N.Coast	KO	BCE Act; Regs; Cnsrv, LRMP Devl	SI	L
Kincolith R.	N.Coast	ACT	BCE Act; Regs; Cnsrv, LRMP Devl	SI; FN Hrvst;	L
Kincolith R.	N.Coast	ADV	BCE Act; Regs; Cnsrv, LRMP Devl	SI; FN Hrvst;	L
Kloyia R.	N.Coast	ACT	BCE Act; Regs; Cnsrv, LRMP Devl	SI, CRL	L
Kloyia R.	N.Coast	ADV	BCE Act; Regs; Cnsrv, LRMP Devl	SI, CRL	L
Kwinamass R.	N.Coast	ACT	BCE Act; Regs; Cnsrv, LRMP Devl	SI; FN Hrvst;	L
Kwinamass R.	N.Coast	ADV	BCE Act; Regs; Cnsrv, LRMP Devl	SI; FN Hrvst;	L
Princess Royal Island Tribs	N.Coast	ADV	BCE Act; Regs; Cnsrv, LRMP Devl	SI	L
Triumph R.	N.Coast	ADV	BCE Act; Regs; Cnsrv, LRMP Devl	SI	L
Work Channel Tribs	N.Coast	ADV	BCE Act; Regs; Cnsrv, LRMP Devl	SI	L
Small Lakes Inventory	North Coast	DV/CT/RB	BCE Act; Regs; Cnsrv; LRMP Devl.	1:20k	L
Braverman C.	QCI	ADV	BCE Act; Regs; Cnsrv	CRL; SI	L
Copper C.	QCI	ADV	BCE Act; Regs; Cnsrv	CRL; SI	L
Davidson R.	QCI	ADV	BCE Act; Regs; Cnsrv	CRL; SI	L
Deena C.	QCI	ADV	BCE Act; Regs; Cnsrv	CRL; SI	L
Hanna C.	QCI	ADV	BCE Act; Regs; Cnsrv	CRL; SI	L
Maman R.	QCI	ADV	BCE Act; Regs; Cnsrv	CRL; SI	L
Mathers R.	QCI	ADV	BCE Act; Regs; Cnsrv	CRL; SI	L
Naden C.	QCI	ADV	BCE Act; Regs; Cnsrv	CRL; SI	L

Watershed/Waterbody	MoF District	Species	Inventory Rationale/ Business Driver	Inventory Type	Relative Priority
Pallant C.	QCI	ADV	BCE Act; Regs; Cnsrv	CRL; SI	L
Skdanz C.	QCI	ADV	BCE Act; Regs; Cnsrv	CRL; SI	L
Tlell R.	QCI	ADV	BCE Act; Regs; Cnsrv	CRL; SI	L
Regional Fish Collection Permit Database	Region	all species	BCE Act; Regs; Cnsrv;	Framework	L

Note: Projects do not appear in a prioritized form within each realtive priority category

Definitions

Inventory Type

CRL = Creel
1:50k = Overview FFHI
1:20k = Reconnaissance FFHI
1:5k = Intensive Operational FFHI
SI = Intensive Species/Habitat Inventory

juv = Juvenile

Fish Species

WST = Winter Steelhead
SST = Summer Steelhead
ACT = Andadromous Cutthroat trout
CT = Cutthroat trout
ADV = Anadromous Dolly Varden
DV = Dolly Varden
BT = Bull trout
RB = Rainbow trout
LT = Lake trout
LW = Lake Whitefish
IN = Inconnu

Inventory Rationale/Business Driver

BCE Act = BC Min.of Environment Act
Regs = Regulation Development
Hrvst = Harvest Allocation
Cnsrv = BC MELP Fisheries Section Conservation Strategy
FNTN = First Nations Treaty Negotiations

FTN Imp. = First Nations Treaty Implementation

Sect. 35 = First Nations Fisheries Harvest

LRMP Develp = LRMP Development Support
LRMP Imp. = LRMP Implementation
IWMS = Identified Wildlife Management Strategy

Relative Priority

C = critical
VH = very high
H = high
M = moderate
L = low

Skeena Region: Identified Water Quality & Quantity Projects
Forest Resources Inventory, Resources Management Plan, 2000/01

Watershed/Waterbody	MoF District	Inventory Rationale/ Business Driver	Cost ($' 000s)	Priority
Rivers Project: Forest harvesting impact monitoring and assessment aquatic ecosystems	Lakes, Morice, Bulkley, Kispiox, Kalum and N Coast	LRMP Imp; Certification	120	H
Lakes Project: Sedimentation impact sensitivity assessment system for high fish value lakes	Bulkley, Morice, Lakes	LRMP Imp; Certification	100	H

Table 1: Detailed Wildlife Inventory Needs -- Skeena Region, last updated, *September 1st, 2000.*

Species	Population Name	Geographic Area	Rationale for Inventory (see below)	Inventory Type (see below)	Last Inventory	Ideal Inventory Frequency (years)	Relative Priority Within Species	Estimated Cost
Legend:			*H = Harvested, popl'n needs monitoring; TN = Treaty Negotiations require popl'n inventory; LUP = Land Use Planning requires distribution, habitat quality, monitoring; IWMS = Identified Wildlife; AP = Access Pressure Increasing; BM = Benchmark Area; Biodiversity= rare: O = Other (detail)*	*AA = Absolute abundance; RA = Relative Abundance; PA = Presence (distribution); DI = Demographic Indices; CH = Critical Habitat; BEI = BEI CapSu; TEM = TEM/PEM CapSu; TA = Taxonomy*			*H = High; M = Medium; L = Low*	** = Cost would cover inventory of other species with similar distribution (species to be grouped indicated with same number of asterisks)*
Yellow Listed								
Moose								
	Bulkley Valley-Lakes District	MUs 6-4,5,6,8 and 9	H, TN, LUP	AA	1997	5	H	$80,000
			BM	DI	1997	1	H	$10,000 - $15,000
	Tweedsmuir	MUs 6-1 and 2	H, TN, LUP	AA	1997	5	M	$60,000
	Skeena Islands	MUs 6-3, 9, 10, 11, 15	H, TN, LUP	AA	1989	5	M	$60,000
			BM	DI	1989	1	M	$10,000 - $15,000
	Kispiox	MU 6-30	H, TN, LUP	AA	1999	5	L	$60,000
	Nass	MUs 6-14, 16	H, TN, LUP	AA	1997	5	H	$80,000
	Spatsizi	MU 6-20	H, TN, LUP	AA	1990	5	L	$60,000
	Level Mtn	MU 6-22	H, TN, LUP	AA	1990	5	M	$60,000
	Liard plains	MUs 6-23, 24	H, TN	AA	1997	5	L	$60,000
			BM	DI	1997	1	M	$10,000-$15,000
	Teslin	MU 6-25	H, TN	AA	2000	5	L	$60,000
	Atlin	MU 6-25	H, TN	AA	2000	5	L	$60,000
			BM	DI	2000	1	M	$10,000-$15,000
	Tatshenshini	MU 6-29	H, TN	AA	1997	5	L	$60,000
Caribou								
	Tweedsmuir-Entiako	MU 6-2	H, LUP	AA	1982	5	H	$40,000
			BM	DI	1982	1	M	$10,000-$15,000
	Spatsizi	MU 6-20	H, TN	AA	?	5	M	$40,000
	Level Mtn	MUs 6-22, 26	H, TN	AA	1998	5	L	$20,000
	Little Rancheria, Horseranch	MUs 6-23, 24	H, TN, LUP	AA	1999	5	H (LRH)	$40,000
			BM	DI	1999	1	H	$15,000-$20,000
	Atlin	MU 6-25	H, TN, AP	AA	1999	5	L	$60,000
			BM	DI	1999	1	M	$5,000-$15,000
	Atlin (West)	MU 6-27	H, TN	AA	?	5	M	$20,000
	Edziza	MU 6-21	TN	AA	No data	5	M	$20,000
	Jennings	MU 6-25	H, TN	AA	No data	5	H	$20,000
	Telkwa	MU 6-9	AP,LUP	AA	2000	1	H	$5,000
			BM	DI	2000	1	H	$5,000
	Kispiox	MU 6-30	AP, LUP	AA,PA	No data	5	M	$5,000-$10,000
	Tsenaglode	MU 6-19, 22	H, TN	AA	None	5	M	$25,000
Mule Deer	Interior	MU's 6-1,2,4,5,6,8, 9,30	H	AA	No data	5	L	?
	Coastal	MU's 6-3,10,11,14,15	H	AA	No data	5	L	?
	Queen Charlotte Islands	MU's 6-12,13	H	AA	No data	5	L	?
Mountain Goat	Tatshenshini Park	MU 6-29	H	AA	1996	10	L	$35,000
	Atlin Park	MU 6-27,25	H	AA	1997	10	L	$16,000
	Spatsizi Park	MU 6-20	H	AA	1994	10	L	$25,000

Species	Population Name	Geographic Area	Rationale for Inventory (see below)	Inventory Type (see below)	Last Inventory	Ideal Inventory Frequency (years)	Relative Priority Within Species	Estimated Cost
	Babine Mountains Park	MU 6-08 zone F	H	AA	1997	5	L	$5,000
			BM	AA	1997	2	M	$5,000
	Tweedsmuir Park	MU 6-02	O (info gap)	AA	1988	10	L	$5,000
	Mt Edziza Park	MU 6-21	H	AA	1996	10	M	$15,000
	Bennet Range/Kusuwa	MU 6-28	H	AA	1985	5	L	$8,000
	Tagish HighLands	Mu 6-27	H	AA,DI	1990	5	L	$30,000
		Tutshi L portion	BM	AA	1990	2	M	$12,000
	Atlin East	MU 6-25 (Atlin-Teslin L)	TN, AP	AA	1998	5	L	$15,000
	Tuya Range	MU 6-25 (Teslin L - Jennings R-Little RacheriaR)	H, TN	AA	None	10	M	$30,000
	Kedaha L	Telin R-Glundenberry R-Blackfly L-Jennings R-)	H, TN	AA	None	5	L	$8,000
	Heart Pks	Nahlin R-Shesley R-Kashin r-)	H, TN	AA	None	5	L	$2,500
	Level Mtn	Tuya R-Nahlin R-Kashin R-Camp I L-hackett R Tahltahn R-Stikine_)	H, TN	AA	None	5	L	$2,500
	Kawdy Plateau	MU 6-22,24,25,26 (Kashin R-Tuya R-Stikine R -DeaseL-Cotton Wood R - parralell Cr-Blackfly L-Glundenberry Cr-)	H, TN	AA	None	5	M	$30,000
	Cassiar	6-24 (Little rancheria-Border-Dease R-Eagle R-Dease L-Cottonwood R-)	H, TN	AA	None	5	M	$20,000
	Horseranch	Mu 6-23,52 (Horseranch range)	H, TN	AA	None	5	L	$5,000
	Cry L	Mu 6-23,52 LooncryL-Deadwood L,-majorhard R-Turnagin R-Eagle R-Dease R--Rapid R-)	H, TN, AP	AA	None	5	L	$35,000
	Upper Stikine N	MU 6-19, 7-52 (DeaseL-Turnagin R-RainBow L-Skeena Boundar-Pitman R-Stikine-Hwy37-)	H, TN, LUP	AA	None	5	L	$25,000
	Stikine Headwaters	MU 6-19,20 (Stikine R-Pitman R-Skeena Boundary-Spatsizi Boundary-Klappan R-)	H, TN, LUP	AA	None	5	L	$25,000
	Todagin	MU 6-20 (Hwy 37-Klappan-TumekaL-barrage Cr-Hwy 37-)	H, TN, LUP	AA	None	5	M	$9,000
	RN Mt	Burrage Cr-Tumeka L-Bell Irving R-Hwy37-)	H, TN, LUP	AA	None	5	L	$14,000
	Upper Nass	Bell Irving- Tumeka L-Upper Nass R-Muckaboo R-)	H, TN, LUP	AA	None	5	L	$20,000
	Kluyaz	Little Klappan-Spatsizi Boundary-Skeena region Boundary-Mosque R-Skeena-Damdochax-NassR-)	H, TN, LUP	AA	None	5	L	$25,000
	Sustut	MosqueR-Skeena Boundary-Bear R-Sustut R-)	H,TN,LUP,AP	AA	None	5	L	$25,000
	Motase	Bear L-Sustut R-Skeena R-Sikintine R-Shelagyote R-Hilary Cr-Nilkitkwa R-Motase L-Skeena Boundary-)	H,TN,LUP,AP	AA	None	5	M	$10,000
	Atna Range	Skeena R- Sicintine R-Shelagyote-BabineR-)	LUP,H,AP	AA	1998	5	M	$11,000
	Kuldoe Cr	Cayon Cr-Skeena r-Kuldoe-Saicote Cr-Nass R-- Vile cr-)	H,LUP,TN	AA	None	5	L	$15,000

Species	Population Name	Geographic Area	Rationale for Inventory (see below)	Inventory Type (see below)	Last Inventory	Ideal Inventory Frequency (years)	Relative Priority Within Species	Estimated Cost
	Black Water Peak	Damdochax Cr-Slamgeesh-Skeena R-Canyon Cr-Vilr Cr-Nass-)	H,LUP,TN	AA	None	5	L	$10,000
	Mt Stephens & Madley		H,LUP,AP	AA	None	5	M	$2,000
	Mt Bell Irving		H,LUP,AP	AA	None	5	M	$2,000
	Strata Range	Nass R-Taylor R-Muckaboor Cr-Rochester Cr-Bell Irving R-)	H,LUP,AP	AA	None	5	M	$25,000
	Kotsinta Cr.	Taylor R-Muckaboo Cr-Nass R-)	H,LUP	AA	None	5	L	$10,000
	Sweetin R	Kuldo Cr-Skeena-Cullon Cr- Kispiox R-Fred wright L-Saicote Cr-)	AP,H,TN,LUP	AA	None	5	M	$10,000
	Mt Pope		H,LUP	AA	None	5	L	$1,500
	Mt Pattullo	Hwy 37A- Alasak Bord-Frank Mackie Glacier-Bowser R-Hwy 37-)	H	AA	None	5	L	$15,000
	Snowslide range	Frank mackie Glacier-Upper Unuk-Tiegen Cr-Bell Irving R-Bowser R-)	H,LUP	AA	None	5	L	$10,000
	Unuk R	Frank Mackie Gla-Int Border-Unuk R- Upper Unuk R-)	H,LUP	AA	None	5	M	$15,000
	Iskut R South	Int Border-Stikine R-Iskut R-Bob Qinn -Hwy 37- Tiegan Cr	H,LUP	AA	None	5	L	$30,000
	Iskut R North	Stikine R- Porcupine R-More Cr-)	H	AA	None	5	L	$15,000
	Klastline Pl	Ball Cr- Edziza Pk Boundry-Stikine-Hwy 37-)	H	AA	1981	5	M	$12,000
	Hankin PK	Mess Cr-Edziza Park Boundary-Ball Cr-Hwy 37- More Cr-)	H	AA	None	5	M	$2,000
	Stikine East	Stikine R-Scud R-Glacier-Sphalet Cr-Porcupine R-)	H	AA	None	5	L	$12,000
	Stikine E-N	Stikine R-YehiniKo-Scud R-)	H	AA	None	5	L	$15,000
	Yehiniko	Stikine - Mess Cr-Glacier-Yehiniko-)	H	AA	None	5	L	$20,000
	Lower Stikine W	Int Border-Sheppard Pk- Chutine L-Stikine-)	H	AA	None	5	L	$25,000
	Tahltan L	In Border- Sheslay R-Hackett R-Tahltan R-Stikine _ ChutineR-)	H	AA	None	5	M	$30,000
	Tatsamini L	Shesley R -Glacier-Tatsamini L- Tatsatua Cr-Sheslay R-)	H	AA	None	5	M	$30,000
	Whiting R	Tatsamini L-Glacuie(S of Border L)-Int Border-Mt Ogden -Sutlahine R-Inklin-Shesley-Tatsatua-)	H	AA	None	5	L	$30,000
	King Salmon L	Sutlahine R- Mt Ogden-Border-Taku R-Inklin R-)	H	AA	None	5	L	$10,000
	TulseQuah L	Border- Atlin Park Boundary-Tulsequah Gl- Taku R-)	H	AA	None	5	L	$5,000
	Taku R	Tulsequah -Shaza Cr _ Nakonake-Sloko-Taku-)	H	AA	None	5	L	$10,000
	Nakonake	Shaza Cr-Tulsequah-Park boundary-Sloko R-nakonake-)	H	AA	None	5	L	$8,000
	MtSinawa eddy		H	AA	None	5	M	$3,500
	Mt Okeefe & Mt Focus	Park Bdy-Silversamon R-nakinaR-Sloko R-)	H	AA	None	5	L	$1,000
	Chikoida Mt-		H	AA	None	5	M	$800

Species	Population Name	Geographic Area	Rationale for Inventory (see below)	Inventory Type (see below)	Last Inventory	Ideal Inventory Frequency (years)	Relative Priority Within Species	Estimated Cost
	Llanggorse Mt	Rapid Roy Cr-Hurricane Cr-paddy L-Gladys R-)	H	AA	None	5	L	$6,000
	Princess Royal island		H	AA	None	5	L	$8,000
	Pitt Island		H	AA	None	5	L	$5,000
	Pooley I		H	AA	None	5	L	$1,500
	Coast range s	Mussel In -Mussel R-Kowisas R-Gardner Can-Ursula Ch-Inside Passage-)	H	AA	None	5	L	$25,000
	Kitlope W	W-Whidby Reach-Kitlope R-Region Boundary-Mussel In -Mussel R- kowissas R-)	H	AA	None	5	L	$10,000
	Kitlope E	Kitlope R- Gardner cannal-kemano R-Sandifer Cr- Ht of Land Bdy-)	H	AA	None	5	L	$20,000
	Kitimat e	Kitimat R- Ht of land-Kiidala-Ocean-)	H	AA	None	5	L	$20,000
	Kldala W	Ocean-Kildala- Ht of land-Kemano R-)	H	AA	None	5	L	$20,000
	Ecstall W	Ecstall R-Quall R-Ocean-Skeena-)	H	AA	None	5	L	$20,000
	Foch lagoon	Gilltoyees R- Ht of land - Windsor r-Skeena - Ecstall R- Quall R-Douglas Chan-)	H,AP	AA	None	5	M	$10,000
	Jesse Cr	Giltoyees R- Ht of Land -S bdy of little widene-kitimat - Douglas Cha -)	H,AP	AA	None	5	M	$2,000
	Khyex w	Khyex r - Skeena - Work Ch- Toon r -)	H,AP	AA	None	5	L	$10,000
	Mt Mcniel	work Ch-Khutzeymateen-Toon-)	H,AP	AA	None	5	L	$10,000
	Kwinamass Pk	Kwinamass - Ocean - Ishkeenich - Ht of land t-)	H,AP	AA	None	5	M	$10,000
	L Nass	Iskeenich - nass - Kesedin Cr- Ht of Land -)	H,AP	AA	None	5	L	$3,000
	L nass	Nass- Tseax- Alder Pk - Ht of land - Ksedin Cr-)	H,AP	AA	None	5	L	$1,500
	Wales island		LUP	AA	None	5	L	$800
	MG 26	Pierce island	H,AP	AA	None	5	L	$1,200
	MG 22	portland canal-Belle bay-Observatory in-)	H	AA	None	5	L	$4,000
	MG16	Bell Bay-Portland Can-Cr N of Donahue Cr-Anyox Cr-Observatory In -)	H	AA	None	5	L	$3,000
	MG 13	Anyox Cr- Unanemed Cr N of Donahue Cr-Georgie r - e Georgie R-sutton R-Kswan R - Observatory In -)	H	AA	None	5	L	$3,500
	MG 9	E Georgie R - portland can- Marmot R-Kshwan Cr -Sutton R-)	H	AA	None	5	L	$2,500
	MG 06	Marmot R - Portland Can -Bear R -Bear Glacier-)	H	AA	None	5	L	$2,500
	MG 07	Bear R-Srohn Cr-Hwy 37- Nass r-white R - Willoughby r - Glacier-)	H	AA	None	5	L	$2,500
	MG 08	White R - nass-Little paw Cr-Kswan R-glacier- willoughby Cr-)	H	AA	None	5	L	$2,500
	MG 11	Little paw cr - nass - Kinskuch R-Niska Cr-)	H	AA	None	5	L	$3,000
	Mg 12	Kinskuch R- Nass-Kwinahtahl R- Kitsault R-Jade L-Niska cr-)	H, AP	AA	None	5	H	$1,000

Species	Population Name	Geographic Area	Rationale for Inventory (see below)	Inventory Type (see below)	Last Inventory	Ideal Inventory Frequency (years)	Relative Priority Within Species	Estimated Cost
	MG 14	Hastings Arm-E for of Kshwan R-Kitsault R-Alice Arm-)	H	AA	None	5	L	$3,000
	MG 19	Kitsault-Kwinahtahl R-Hoan Cr-Cr N of Stagoo cr-Observatory in -)	H,AP	AA	None	5	L	$4,000
	Mg 20	Hoan Cr-Kwinah tahl R-Nass-Anudol Cr-Glacier-)	H,AP	AA	None	5	L	$3,000
	MG 21	Nass R- Observatory In -Cr N of stagoo Cr-glacier- Anudol Cr-)	H,AP	AA	None	5	H	$4,000
	615-K		H,AP	AA	None	5	L	$8,000
	615-J		H,AP	AA	None	5	L	$8,000
	615-H		H,AP	AA	None	5	L	$8,000
	615-I		H,AP	AA	None	5	L	$10,000
	615-G		H,AP	AA	None	5	L	$5,000
	615 A		H,AP	AA	None	5	L	$10,000
	615-B		H,AP	AA	1982	5	L	$5,000
	615-C		H,AP	AA	1970	5	L	$6,000
	615- D		H,AP	AA	1996	5	M	$8,000
	615- E		H,AP	AA	1996	5	M	$2,500
	615-F		H,AP	AA	1996	5	M	$2,500
	610-A		H,AP	AA	1989	5	L	$3,500
	610-B		H,AP	AA	1989	5	L	$3,500
	611-A		H,AP	AA	1994	5	L	$6,000
	609-P		H,AP	AA	None	5	M	$15,000
	609-O		H,AP	AA	1994	5	M	$1,600
	609-L		H,AP	AA	1994	5	M	$800
	609-K		H,AP	AA	None	5	M	$2,000
	609-J		H,AP	AA	None	5	M	$1,500
	609-B		H,AP	AA	1989	5	M	$3,500
	609-C		H,AP	AA	1999	5	L	$5,000
			BM	AA	1999	5	H	$5,000
	609-I		H,AP	AA	1999	5	L	$3,000
	609-A		H,AP	AA	1999	5	L	$3,000
	Hudson bay Mt		H,AP	AA	None	5	L	$1,200
	Telkwa Mt		H,AP	AA	1996	5	M	$5,000
	609-M		H,AP	AA	1999	5	L	$5,000
	609-H		H,AP	AA	1999	5	M	$1,500
	609-N		H,AP	AA	None	5	M	$5,000
	609-D		H,AP	AA	1999	5	L	$2,500
	609-E		H,AP	AA	1995	5	M	$2,500
	609-R		H,AP	AA	None	5	L	$12,000
	609-Q		H,AP	AA	1990	5	L	$3,000
	630C		H,AP	AA	1993	5	L	$3,500
	609-G		H,AP	AA	1999	5	M	$2,500
	609-F		H,AP	AA	1999	5	L	$2,000
	603-A		H,AP	AA	None	5	L	$8,000
	604-A		H,AP	AA	None	5	M	$3,000
	604-B		H,AP	AA	1995	5	L	$2,000
	604-C		H,AP	AA	None	5	M	$3,000
	608-A		H,AP	AA	1990	5	M	$8,000
	608-B		H,AP	AA	1998	5	L	$3,000
	Bait Range (608 zone C & 7-27)	Nilkitkwa R-Driftwood R-Takla L-Sakiniche R-Natowite L-Babine L-)	H,AP	AA	1994	5	M	$4,000
	608-D		H,AP	AA	1999	5	M	$2,500
	608-E		H,AP	AA	1999	5	M	$1,500
	Foxy Cr		H,AP	AA	1999	5	L	$800
	Maxan Cr		H,AP	AA	None	5	L	$1,500
	Ootsa L		H,AP	AA	None	5	M	$1,000
	Pine tree Lk Bluffs		H,AP	AA	1999	5	M	$800
	China Nose		H,AP	AA	1999	5	M	$800
	Mt Morice		H,AP	AA	1999	5	L	$1,200
	Blunt Mt		H,AP	AA	1996	5	M	$4,600

Species	Population Name	Geographic Area	Rationale for Inventory (see below)	Inventory Type (see below)	Last Inventory	Ideal Inventory Frequency (years)	Relative Priority Within Species	Estimated Cost
Thinhorn Sheep - Stone	Spatsizi	MU 6-20	H	AA, DI	?	5 years	L	$20,000
	Edziza	MU 6-21	H	AA, DI	No Data	5 years	L	$10,000
	Cassiar		H	AA, DI.	1998 (partial)	5 years	M	$60,000
	Atlin	MU 6-25	H, TN	AA, DI.	1997	5 years	M	$30,000
Black Bear	Morice-Babine	MUs 6-1,2,4,5,6,8,9,15	H	RA	None	10	L	$70,000
	Coastal	MUs 6-3,10,11,14	H,TN	RA	None	10	L	$90,000
	Northern	MUs 6-7,16-30	H	RA	None	10	L	$150,000
	Queen Charlotte Islands	MUs 6-12,13	H	RA, CH	None	10	L	$100,000
			O (genetics)	TA	early 1990s	10	L	$50,000
Northern Goshawk - atricapillus	Coastal - year-round	North Coast and Kalum FDs	IWMS	RA, CH	None	10	M	$150,000
	Interior - spring/summer	Kispiox FD	IWMS	RA, CH	2000	10	L	$150,000
		Bulkley FD	IWMS	RA, CH	None	10	L	$150,000
		Morice-Lakes FDs	IWMS	RA, CH	2000+	10	L	$170,000
		Cassiar FD	IWMS	RA, CH	None	10	L	$250,000
Red listed								
Northern Goshawk - laingi	QCI Goshawk	QCI FD & Gwaii Hanaas	IWMS	RA, CH	1998	5	H	$100,000
Swainson's Hawk	Undifferentiated	Lakes, Morice, Bulkley & Kispiox FDs	Biodiversity	CH	None	10	L	$50,000
Peregrine Falcon - anatum	Undifferentiated	Mainland portions of Skeena - North Coast	Biodiversity	AA, CH	None	10	L	$40,000
Hudsonian Godwit	Undifferentiated	Cassiar FD	Biodiversity	RA, CH	None	10	L	$120,000 **
Upland Sandpiper	Undifferentiated	Entire region (esp Cassiar and Lakes)	Biodiversity	RA, CH	None	10	L	$120,000 **
Horned Puffin	Various colonies	QCI FD & Gwaii Hanaas	Biodiversity	RA, CH	CWS ?	5	L	$150,000 ***
	Various colonies	North Coast	Biodiversity	RA, CH				$150,000 *
Thick-billed Murre	Undifferentiated	QCI (wintering)	Biodiversity	RA, CH	CWS ?	10	L	?
Common Murre	Various colonies	QCI FD & Gwaii Hanaas	Biodiversity	RA, CH	CWS ?	5	L	$150,000 ***
	Various colonies	North Coast	Biodiversity	RA, CH	CWS ?	5	L	$150,000 *
Marbled Murrelet	QCI	QCI FD	IWMS	CH, RA	2000+	>5	H	$200,000
	North Coast & Kalum	North Coast & Kalum FD's	IWMS	CH, RA	None	5	H	$150,000
Tundra Shrew	Undifferentiated	Cassiar FD	Biodiversity	PA	None	10+	L	$45,000 ****
Keen's Long-eared Myotis	QCI	QCI FD & Gwaii Hanaas	IWMS	PA, CH	Incidental	5	H	$40,000
	Mainland	North Coast, Kalum and Kispiox FDs	IWMS	PA, CH	Incidental	5	H	$100,000
Short-tailed Weasel - haidarum	QCI	QCI FD & Gwaii Hanaas	Biodiversity	PA, CH	1998	5	L	$50,000
Sea Otter	Undifferentiated	QCI & North Coast	Biodiversity	PA	None	5	L	$50,000
Red-listed Plant Communities	Cassiar	Cassiar FD	Biodiversity	PA	None	10	L	$35,000
	QCI	QCI FD	Biodiversity	PA	Incidental	2	H	$30,000
	North Coast	North Coast FD	Biodiversity	PA	None	2	H	$30,000
	Kalum	Kalum FD	Biodiversity	PA	None	5	H	$35,000
	Kispiox	Kispiox FD	Biodiversity	PA	None	5	M	$20,000
	Bulkley	Bulkley FD	Biodiversity	PA	1997	10	L	$15,000
	Morice	Morice FD	Biodiversity	PA	None	5	M	$30,000
	Lakes	Lakes FD	Biodiversity	PA	None	5	L	$30,000
Blue listed								
Tailed Frog - coastal	Undifferentiated	North Coast and Kalum FDs	IWMS	PA, CH	Portions of Kalum - 1996	5	H	$120,000
Double-crested Cormorant	Various colonies - QCI	QCI FD & Gwai Hanaas	Biodiversity	RA, CH	CWS ?	10	L	$150,000 ***
	Various colonies - NC	North Coast	Biodiversity	RA, CH	CWS ?	10	L	$150,000 *
American Bittern	Undifferentiated	Bulkley, Morice and Lakes FDs	IWMS	PA, CH	none	5	L	$25,000
Great Blue Heron	QCI	QCI FD	Biodiversity	PA, CH	Incidental	5	H	$70,000
	North Coast	North Coast and Kalum FDs	Biodiversity	PA, CH	None	5	M	$100,000

Species	Population Name	Geographic Area	Rationale for Inventory (see below)	Inventory Type (see below)	Last Inventory	Ideal Inventory Frequency (years)	Relative Priority Within Species	Estimated Cost
Trumpeter Swan	Pacific Coast	Atlin & Liard? / North Coast	IWMS	PA, CH	None	5	M	$25,000
	Rocky Mtn / Interior	Liard? / Lakes	IWMS	PA, CH	None	5	M	$10,000
Oldsquaw	Undifferentiated	Cassiar FD (nesting)	Biodiversity	PA, CH	None	10	L	$40,000 *****
		QCI & North Coast (wintering)	Biodiversity	PA, CH	None	10	L	$25,000
Surf Scoter	Undifferentiated	Cassiar FD (breeding)	Biodiversity	PA, CH	None	10	L	$40,000 *****
Peregrine Falcon - pealei	QCI	QCI FD & Gwaii Hanaas	Biodiversity	AA, CH	2000	5	L	$40,000
Gyrfalcon	Undifferentiated	Cassiar FD	Biodiversity	AA, CH	None	5	L	$100,000
Sharp-tailed Grouse - columbianus	Undifferentiated	Lakes and Morice FDs	Biodiversity	PA, CH	None	10	L	$40,000
Sandhill Crane	Coastal	QCI and North Coast FDs	IWMS	PA, CH	None	5	M	$70,000
	Interior	East of Coast range (nesting in Cassiar ?)	IWMS	PA, CH	None	10	L	$40,000
American (=Lesser) Golden Plover	Undifferentiated	Cassiar FD	Biodiversity	PA, CH	None	10	L	$65,000 **
Wandering Tattler	Undifferentiated	Cassiar FD	Biodiversity	PA, CH	None	10	L	$65,000 **
Short-billed Dowitcher	Undifferentiated	QCI & Cassiar FD	Biodiversity	PA, CH	None	10	L	$65,000 **
Red-necked Phalarope	Undifferentiated	Cassiar FD	Biodiversity	PA, CH	None	10	L	$65,000 **
Ancient Murrelet	Various breeding colonies	QCI FD & Gwai Hanaas	Biodiversity	RA, CH	CWS ?	5	L	$150,000 ***
		North Coast	Biodiversity	RA, CH	CWS ?	5	L	$150,000 *
Tufted Puffin	Various breeding colonies	QCI FD & Gwai Hanaas	Biodiversity	RA, CH	CWS ?	5	L	$150,000 ***
		North Coast	Biodiversity	RA, CH	CWS ?	5	L	$150,000 *
Cassin's Auklet	Various breeding colonies	QCI FD & Gwai Hanaas	Biodiversity	RA, CH	CWS ?	5	L	$150,000 ***
		North Coast	Biodiversity	RA, CH	CWS ?	5	L	$150,000 *
Short-eared Owl	Undifferentiated	Lakes, Morice and Bulkley FDs	Biodiversity	PA, CH	None	10	M	$45,000
Northern Saw-whet Owl - brooksi	QCI	QCI FD & Gwaii Hanaas	Biodiversity	PA, CH	1996	10	L	$55,000
Hairy Woodpecker - picoideus	QCI	QCI FD & Gwaii Hanaas	Biodiversity	RA, CH	Incidental	10	M	$70,000 ******
Steller's Jay - carlottae	QCI	QCI FD & Gwaii Hanaas	Biodiversity	RA, CH	Incidental	10	M	$70,000 ******
Smith's Longspur	Undifferentiated	Cassiar FD	Biodiversity	PA, CH	Incidental	10	L	$120,000 **
Pine Grosbeak - carlottae	QCI	QCI FD & Gwaii Hanaas	Biodiversity	RA, CH	None	10	M	$70,000 ******
Northern Long-eared Myotis	Undifferentiated	Mainland	Biodiversity	PA, CH	None	10	M	$70,000
Meadow Jumping Mouse - alascensis	Cassiar	Cassiar FD	Biodiversity	RA, CH	Incidental	10	L	$45,000 ****
Fisher	Undifferentiated	Mainland	IWMS	TEM	Patchy in Morice - 1998	Once with Habitat Supply Analysis	M	$50,000
Wolverine	Undifferentiated	Mainland	IWMS	RA, CH	None	10	M	$140,000
	Undifferentiated	Mainland	Biodiversity	BEI	None	10	M	$40,000
	Undifferentiated	Mainland	Biodiversity	CH	None	10 +	L	$250,000
	Undifferentiated	Mainland	Biodiversity	DI	1980s	10	M	$25,000
Grizzly Bear	Blackwater-West Chilcotin	MU 6-1	H	RA	None	5	M	$250,000
	Tweedsmuir	MU 6-2	H	RA	None	5	M	$250,000
	Bulkley-Lakes	MU 6-3,6-4A,6-9A,B	H	RA	None	5	H	$250,000
	Francois	MU 6-4B, 6-5, 6-6	H	RA	None	5	M	$250,000
	Babine	MU 6-7, 6-8	H	RA	None	5	H	$250,000
	North Coast	MU 6-10, 6-11	H	RA	None	5	H	$250,000
	Stewart	MU 6-14	H	RA	None	5	H	$250,000
	Khuzeymateen	MU 6-15	H	RA	None	5	H	$250,000
	Upper Skeena - Nass	MU 6-16A,B, 6-17, 6-18	H,TN	RA	None	5	H	$250,000
	Spatsizi	MU 6-20A,B, 6-19	H	RA	None	5	M	$250,000
	Edziza	MU 6-21A	H	RA	None	5	M	$250,000
	Lower Stikine	MU 6-21B	H	RA	None	5	M	$250,000

Species	Population Name	Geographic Area	Rationale for Inventory (see below)	Inventory Type (see below)	Last Inventory	Ideal Inventory Frequency (years)	Relative Priority Within Species	Estimated Cost
	Cassiar	MU 6-22, 6-24, 6-25A&B	H	RA	None	5	M	$250,000
	Muskwa	MU 6-23	H	RA	None	5	M	$250,000
	Taku	MU 6-26	H,EA	RA	None	5	H	$250,000
	Tagish	MU 6-27	H	RA	None	5	M	$250,000
	Tatshenshini	MU 6-28, 6-29	H	RA	None	5	M	$250,000
	Cranberry	MU 6-30	H	RA	None	5	H	$250,000
Black Bear - emmonsii	Glacier Bear	Tatshenshini	Biodiversity	RA	None	10	L	$100,000
	Glacier Bear	Tatshenshini	Biodiversity	TA	None	Once	L	$45,000
Thinhorn Sheep - Dall	Tatshenshini	MU's 6-28,29	H,TN	AA, DI	1996	5	L	$30,000
Blue-listed plant Communities	Cassiar	Cassiar FD	Biodiversity	GIS	None	5	L	$5,000
	QCI	QCI FD	Biodiversity	GIS	None	5	L	$5,000
	North Coast	North Coast FD	Biodiversity	GIS	None	5	L	$5,000
	Kalum	Kalum FD	Biodiversity	GIS	None	5	L	$5,000
	Kispiox	Kispiox FD	Biodiversity	GIS	None	5	L	$5,000
	Bulkley	Bulkley FD	Biodiversity	GIS	None	5	L	$5,000
	Morice	Morice FD	Biodiversity	GIS	None	5	L	$5,000
	Lakes	Lakes FD	Biodiversity	GIS	None	5	L	$5,000
Unranked & poorly documented								
Freshwater Invertebrates	Various unusual water body types (esp. karst, hotsprings, fish-free)	Region	Biodiversity	PA	Incidental in mid 90s	10	L	?
Insecta - Lepidoptera	Glacial refugia and zones of hybridization	Coastal / QCI & Cassiar	Biodiversity	PA	Incidental in mid 90s	10	L	?
Insecta - Coleoptera	Glacial refugia and zones of hybridization	Coastal	Biodiversity	PA	?	10	L	?
Other - Furbearers								
Red Squirrel	Undifferentiated	Entire Region	H	RA	None	10+	L	?
Muskrat	Undifferentiated	Entire Region	H	RA	None	10	L	?
Beaver	Mainland - undifferentiated	Mainland	H, O (Indicator)	RA, CH	None	10	L	?
	QCI	QCI FD	O (Alien)	PA	Incidental	5	M	?
Raccoon	Mainland - undifferentiated	Mainland	H	RA	None	10	L	?
	QCI	QCI FD	O (Alien)	PA	Partial 1997	5	H	?
Skunk	Undifferentiated	Entire Region	H	RA	None	10	L	?
Least Weasel	Undifferentiated	Entire Region	H	PA, RA	None	10	L	?
Short-tailed Weasel	Undifferentiated	Entire Region	H	RA	None	10	L	?
Mink	Undifferentiated	Entire Region	H	RA	None	10	L	?
Marten	Undifferentiated	Entire Region	H, O (Indicator)	RA, CH	Incidental	10	L	?
River Otter	Undifferentiated	Entire Region	H, LUP	RA, CH	None	10	L	?
Lynx	Undifferentiated	Entire Region	H	RA	None	10	L	?
Red Fox	Undifferentiated	Entire Region	H	RA	None	10	L	?
Coyote	Undifferentiated	Entire Region	H	RA	None	10	L	?
Wolf	Undifferentiated	Entire Region	H	RA	None	10	L	?
Other - Hunting Regs								
White-tailed Deer	Undifferentiated	Lakes, Morice, Bulkley	H	AA, RA	None	10	L	?
Elk	QCI	Graham Island	H	AA	None	5	L	?
	Bulkley valley	Bulkley/Morice FDs	Biodiversity	RA	None	10	L	?

Table 2 (Inventory Status and Need by Forest District) as developed by MELP. The following legend and notes apply to all tables in this subsection (**table 2**).

*Terrestrial Ecosystem Mapping has an alternative, Predictive Ecosystem Mapping (PEM) with a lower level of intensity of ground truthing. All have RIC standards

DRAFT May 15, 2000

Legend:

A = Good status
B = Satisfactory status
C = Poor Status
n/d = not done
n/a = not applicable

H = Inventory is of high improtance to the Business Driver
M = Inventory is of moderate importance to the Business Driver
L = Inventory is of low importance to the Business Driver

▨	Explicitly required by legislation / regulation
☐	Implicitly required by legislation / regulation (interpretation involved)
▨	Needed to set management objectives or for resource management
▨	All or portion of inventory required for planning process
☐	Information not currently required

Table 2: Inventory Status and Need by Business Driver			Business Driver																									
Region: Skeena, District: Lakes			International			National			Strategic				Reg./Sub-Reg.			Local							Operational Planning Regulations					
Inventory	**Type (Intensity)**	**Status**	Conventio n on	Kyoto Protocol	Criteria + Indicators	Nat. Forest Strategy	Canadian Biodiversit	National Forest	Land Use Charter	Protected Areas	First Nations	Identified Wildlife	Regional Land Use	LRMP	Timber Supply	Resource Managem	Landscape Units	Watershed Assessme	Riparian Assessme	Sensitive Areas	Recreation Features,	Ungulate Winter	Forest Developm	Silviculture Prescriptio	Range Use Plans	Stand Managem	Road Design	Harvesting Regulation
Archaeology	AOA																											
	AIS																											
Forest Health	forest health assessment																											
	pest incidence surveys																											
Karst	reconnaisance																											
	planning																											
Range	range ecosystem inventory																											
	range cultural inventory																											
Recreation	visual landscape inventory																											
	recreation opportunity																											
	recreation features																											
Terrain (Stability) Mapping (including Soils)	Level E/D/C reconnaisance																											
	Level C/B/A - detailed																											
	TS Field Assessment																											
Traditional Use	TU sites																											
Veg. Resources Inventory (VRI)	depletion update																											
	retrofit to VRI standards																											
	new photo estimation																											
	ground sampling (timber)																											
	ground sampling (full VRI)																											
Growth and Yield	productivity assessment																											
	growth model																											
Ecoregion Mapping	ecoregion interpretations																											
Broad Ecosystem Inventory	BEI																											
Predictive Ecosystem Mapping*	PEM - Level 1 (overview)																											
	PEM - Level 2 (detailed)																											
Terrest. Ecosystem Mapping*	TEM - Level R (overview)																											
	TEM -Level 5 (reconnaissance)																											
	TEM - Level 4 (intensive)																											
Rare Ecosystem Inventory	REI																											
BCF: Fish and Fish Habitat	summary (FISS)	A							H	H	H	H		H	H		H		M	M			L					
	overview (1:50,000)	B								L	L	L		L			L											
	reconnaisance (1:20,000)	B										H			M		H		M	H			H		M	M	M	M
	Intensive (1:5,000)	B										L							H	L				H			H	H
	species / population inv	B								H		H	H	H			H			H								
	lake classification	n/d												n/d			n/d		n/d				n/d	n/d				
Water Quality/Quantity	water quantity inventory	C							L				M	M	L	M	M		M	L							M	
	water use inv. (comm.w/s)	C											M	M	L	M	M	M					H	L	M		L	
	water quality inventory	C											M	M	L	M	M	M	M		L		L		M		L	
Wildlife and Wildlife Habitat	BEI interpretations	C							L	H	L	L		L	M	H	H											
	TEM/PEM interpretations	C								M		L		H		H	H			H		H						
	species presence	B							L	H		H	H	L	M	M						H						
	species relative abundance	C										M	M									H						
	species absolute abundance	C									H																	
	rare & endangered species	C							L	H	L	H	H	H	L	M	H		H	H		L	H	H	H	H		

Table 2: Inventory Status and Need by Business Driver

Region: Skeena, District: Morice

Inventory	Type (Intensity)	Status	Business Driver: International			National			Strategic				Reg./Sub-Reg.			Local							Operational Planning Regulations					
			Convention on	Kyoto Protocol	Criteria + Indicators	National Forest	Canadian Biodiversit	National Forest	Land Use Charter	Protected Areas	First Nations	Identified Wildlife	Regional Land Use	LRMP	Timber Supply	Resource Managem	Landscape Units	Watershed Assessme	Riparian Assessme	Sensitive Areas	Recreation Features	Ungulate Winter	Forest Developm	Silviculture Prescriptio	Range Use Plans	Stand Managem	Road Design	Harvesting Regulation
Archaeology	AOA																											
	AIS																											
Forest Health	forest health assessment																											
	pest incidence surveys																											
Karst	reconnaisance																											
	planning																											
Range	range ecosystem inventory																											
	range cultural inventory																											
Recreation	visual landscape inventory																											
	recreation opportunity																											
	recreation features																											
Terrain (Stability) Mapping (including Soils)	Level E/D/C reconnaisance																											
	Level C/B/A - detailed																											
	TS Field Assessment																											
Traditional Use	TU sites																											
Veg. Resources Inventory (VRI)	depletion update																											
	retrofit to VRI standards																											
	new photo estimation																											
	ground sampling (timber)																											
	ground sampling (full VRI)																											
Growth and Yield	productivity assessment																											
	growth model																											
Ecoregion Mapping	ecoregion interpretations																											
Broad Ecosystem Inventory	BEI																											
Predictive Ecosys. Mapping*	PEM - Level 1 (overview)																											
	PEM - Level 2 (detailed)																											
Terrest. Ecosystem Mapping*	TEM - Level R (overview)																											
	TEM - Level 5 (reconnaissance)																											
	TEM - Level 4 (intensive)																											
Rare Ecosystem Inventory	REI																											
BCF: Fish and Fish Habitat	summary (FISS)	A							L	H	H	H		H	H		H		M	M			L					
	overview (1:50,000)	L								L	L	L		L			L											
	reconnaisance (1:20,000)	A										H			M		H		M	H			H		M	M	M	M
	intensive (1:5,000)	B										L							H	L				H			H	H
	species / population inv	C								H		H	H	H			H			H								
	lake classification	n/d												n/d			n/d		n/d				n/d	n/d				
Water Quality/Quantity	water quantity inventory	C											M	M	L	M	M		M	L							M	
	water use inv. (comm w/s)	C											M	M	L	M	M	M					H	L	M		L	
	water quality inventory	C											M	M	L	M	M	M	M		L		L		M		L	
Wildlife and Wildlife Habitat	BEI interpretations	C							L	H	L	L		H	L	H	H											
	TEM/PEM interpretations	C								M		L		H		H	H			H		H						
	species presence	B							L	H		H	H	H	L	M						H						
	species relative abundance	C										M	M									H						
	species absolute abundance	C									H																	
	rare & endangered species	C							L	H	L	H	H	H	L	M	H		H	H		L	H	M	H	M		

Table 2: Inventory Status and Need by Business Driver

Region: Skeena, District: Bulkley

Inventory	Type (Intensity)	Status	Business Driver																									
			International			National			Strategic				Reg./Sub-Reg.			Local							Operational Planning Regulations					
			Conventio n on	Kyoto Protocol	Criteria + Indicators	National Forest	Canadian Biodiversit	National Forest	Land Use Charter	Protected Areas	First Nations	Identified Wildlife	Regional Land Use	LRMP	Timber Supply	Resource Managem	Landscape Units	Watershed Assessme	Riparian Assessme	Sensitive Areas	Recreation Features,	Ungulate Winter	Forest Developm	Silviculture Prescriptio	Range Use Plans	Stand Managem	Road Design	Harvesting Regulation
Archaeology	AOA																											
	AIS																											
Forest Health	forest health assessment																											
	pest incidence surveys																											
Karst	reconnaisance																											
	planning																											
Range	range ecosystem inventory																											
	range cultural inventory																											
Recreation	visual landscape inventory																											
	recreation opportunity																											
	recreation features																											
Terrain (Stability) Mapping (including Soils)	Level E/D/C reconnaisance																											
	Level C/B/A - detailed																											
	TS Field Assessment																											
Traditional Use	TU sites																											
Veg. Resources Inventory (VRI)	depletion update																											
	retrofit to VRI standards																											
	new photo estimation																											
	ground sampling (timber)																											
	ground sampling (full VRI)																											
Growth and Yield	productivity assessment																											
	growth model																											
Ecoregion Mapping	ecoregion interpretations																											
Broad Ecosystem Inventory	BEI																											
Predictive Ecosys. Mapping*	PEM - Level 1 (overview)																											
	PEM - Level 2 (detailed)																											
Terrest. Ecosystem Mapping*	TEM - Level R (overview)																											
	TEM - Level 5 (reconnaissance)																											
	TEM - Level 4 (intensive)																											
Rare Ecosystem Inventory	REI																											
BCF: Fish and Fish Habitat	summary (FISS)	A							L	H	H	H		H	H		H		M	M			L					
	overview (1:50,000)	L								L	L	L		L			L											
	reconnaisance (1:20,000)	A										H			M		H		M	H			H		M	M	M	M
	Intensive (1:5,000)	B										L							H	L				H			H	H
	species / population inv	C								H		H	H	H			H			H								
	lake classification	n/d												n/d			n/d		n/d				n/d	n/d				
Water Quality/Quantity	water quantity inventory	C							L				M	M	L	M	M		M	L							M	
	water use inventory (comm.w/s)	C											M	M	L	M	M	M					H	L	M		L	
	water quality inventory	C											M	M	L	M	M	M	M		L		L		M		L	
Wildlife and Wildlife Habitat	BEI interpretations	B							L	H	L	L		L	L	H	H											
	TEM/PEM interpretations	C								M		L		H		H	H			H		H						
	species presence	B							L	H		H	H	L	L	M						M						
	species relative abundance	B										M	M									H						
	species absolute abundance	B									H																	
	rare & endangered species	C							L	H	L	H	H	H	L	M	H		H	H		L	H	H	H	H		

Table 2: Inventory Status and Need by Business Driver

Region: Skeena, District: Kispiox

Inventory	Type (intensity)	Status	Business Driver																									
			International			National			Strategic				Reg./Sub-Reg.			Local							Operational Planning Regulations					
			Convention on	Kyoto Protocol	Criteria + Indicators	National Forest	Canadian Biodiversit	National Forest	Land Use Charter	Protected Areas	First Nations	Identified Wildlife	Regional Land Use	LRMP	Timber Supply	Resource Managem	Landscape Units	Watershed Assessme	Riparian Assessme	Sensitive Areas	Recreation Features,	Ungulate Winter	Forest Developm	Silviculture Prescriptio	Range Use Plans	Stand Managem	Road Design	Harvesting Regulation
Archaeology	AOA																											
	AIS																											
Forest Health	forest health assessment																											
	pest incidence surveys																											
Karst	reconnaisance																											
	planning																											
Range	range ecosystem inventory																											
	range cultural inventory																											
Recreation	visual landscape inventory																											
	recreation opportunity																											
	recreation features																											
Terrain (Stability) Mapping	Level E/D/C reconnaisance																											
(including Soils)	Level C/B/A - detailed																											
	TS Field Assessment																											
Traditional Use	TU sites																											
Veg. Resources Inventory	depletion update																											
(VRI)	retrofit to VRI standards																											
	new photo estimation																											
	ground sampling (timber)																											
	ground sampling (full VRI)																											
Growth and Yield	productivity assessment																											
	growth model																											
Ecoregion Mapping	ecoregion interpretations																											
Broad Ecosystem Inventory	BEI																											
Predictive Ecosys. Mapping*	PEM - Level 1 (overview)																											
	PEM - Level 2 (detailed)																											
Terrest. Ecosystem Mapping*	TEM - Level R (overview)																											
	TEM - Level 5 (reconnaissance)																											
	TEM - Level 4 (intensive)																											
Rare Ecosystem Inventory	REI																											
BCF: Fish and Fish Habitat	summary (FISS)	A							H	H	H	H		H	H		H		M	M			L					
	overview (1:50,000)	B								L	L	L		L			L											
	reconnaisance (1:20,000)	B										H			M		H		M	H			H		M	M	M	M
	Intensive (1:5,000)	B										L							H	L				H			H	H
	species / population inv	C								H		H	H	H			H			H								
	lake classification	n/d												n/d			n/d		n/d				n/d	n/d				
Water Quality/Quantity	water quantity inventory	C							L				M	M	L	M	M		M	L							M	
	water use inv. (comm.w/s)	C											M	M	L	M	M	M					H	L	M		L	
	water quality inventory	C											M	M	L	M	M	M	M		L		L		M		L	
Wildlife and Wildlife Habitat	BEI interpretations	C							L	H	L	L		L	M	H	H											
	TEM/PEM interpretations	n/d								M		L		H		H	H			H		H						
	species presence	B							L	H		H	H	L	M	M						H						
	species relative abundance	C										M	M									H						
	species absolute abundance	C									H																	
	rare & endangered species	C							L	H	L	H	H	H	M	M	H		H	H		L	H	M	L	H		

Table 2: Inventory Status and Need by Business Driver

Region: Skeena, District: Kalum

			Business Driver																									
			International			National			Strategic				Reg./Sub-Reg.			Local							Operational Planning Regulations					
Inventory	**Type (Intensity)**	**Status**	Convention	Kyoto Protocol	Criteria + Indicators	National Forest	Canadian Biodiversit	National Forest	Land Use Charter	Protected Areas	First Nations	Identified Wildlife	Regional Land Use	LRMP	Timber Supply	Resource Managem	Landscape Units	Watershed Assessme	Riparian Assessme	Sensitive Areas	Recreation Features.	Ungulate Winter	Forest Developm	Silviculture Prescriptio	Range Use Plans	Stand Managem	Road Design	Harvesting Regulation
Archaeology	AOA																											
	AIS																											
Forest Health	forest health assessment																											
	pest incidence surveys																											
Karst	reconnaisance																											
	planning																											
Range	range ecosystem inventory																											
	range cultural inventory																											
Recreation	visual landscape inventory																											
	recreation opportunity																											
	recreation features																											
Terrain (Stability) Mapping (including Soils)	Level E/D/C reconnaisance																											
	Level C/B/A - detailed																											
	TS Field Assessment																											
Traditional Use	TU sites																											
Veg. Resources Inventory (VRI)	depletion update																											
	retrofit to VRI standards																											
	new photo estimation																											
	ground sampling (timber)																											
	ground sampling (full VRI)																											
Growth and Yield	productivity assessment																											
	growth model																											
Ecoregion Mapping	ecoregion interpretations																											
Broad Ecosystem Inventory	BEI																											
Predictive Ecosys. Mapping°	PEM - Level 1 (overview)																											
	PEM - Level 2 (detailed)																											
Terrest. Ecosystem Mapping°	TEM - Level R (overview)																											
	TEM - Level 5 (reconnaissance)																											
	TEM - Level 4 (intensive)																											
Rare Ecosystem Inventory	REI																											
BCF: Fish and Fish Habitat	summary (FISS)	A							n/a	H	H	H		H	H		H		M	M			L					
	overview (1:50,000)	B								L	M	M		M			L											
	reconnaisance (1:20,000)	B										H			M		H		M	H			H		M	M	M	M
	Intensive (1:5,000)	B										L							H	L				H			H	H
	species / population inv	C								H		H	H	H			H			H								
	lake classification	n/d												n/d			n/d		n/d				n/d	n/d				
Water Quality/Quantity	water quantity inventory	C							L				M	M	L	M	M		M	L							M	
	water use inv. (comm.w/s)	C											M	M	L	M	M	M					H	L	M		L	
	water quality inventory	C											M	M	L	M	M	M	M		L		L		M		L	
Wildlife and Wildlife Habitat	BEI interpretations	C							L	H	L	L		H	L	H	H											
	TEM/PEM interpretations	C								M		H		M		H	H			H		H						
	species presence	B							L	H		H	H	H	M	M						H						
	species relative abundance	C										M	M									H						
	species absolute abundance	C									H																	
	rare & endangered species	C							L	H	L	H	H	H	M	M	H		H	H		L	H	H	L	H		

Table 2: Inventory Status and Need by Business Driver

Region: Skeena, District: North Coast

Inventory	Type (Intensity)	Status	International			National			Strategic				Reg./Sub-Reg.			Local							Operational Planning Regulations					
			Conventio n on	Kyoto Protocol	Criteria + Indicators	National Forest	Canadian Biodiversit	National Forest	Land Use Charter	Protected Areas	First Nations	Identified Wildlife	Regional Land Use	LRMP	Timber Supply	Resource Managem	Landscape Units	Watershed Assessme	Riparian Assessme	Sensitive Areas	Recreation Features,	Ungulate Winter	Forest Developm	Silviculture Prescriptio	Range Use Plans	Stand Managem	Road Design	Harvesting Regulation
Archaeology	AOA																											
	AIS																											
Forest Health	forest health assessment																											
	pest incidence surveys																											
Karst	reconnaisance																											
	planning																											
Range	range ecosystem inventory																											
	range cultural inventory																											
Recreation	visual landscape inventory																											
	recreation opportunity																											
	recreation features																											
Terrain (Stability) Mapping (including Soils)	Level E/D/C reconnaisance																											
	Level C/B/A - detailed																											
	TS Field Assessment																											
Traditional Use	TU sites																											
Veg. Resources Inventory (VRI)	depletion update																											
	retrofit to VRI standards																											
	new photo estimation																											
	ground sampling (timber)																											
	ground sampling (full VRI)																											
Growth and Yield	productivity assessment																											
	growth model																											
Ecoregion Mapping	ecoregion interpretations																											
Broad Ecosystem Inventory	BEI																											
Predictive Ecosys. Mapping*	PEM - Level 1 (overview)																											
	PEM - Level 2 (detailed)																											
Terrest. Ecosystem Mapping*	TEM - Level R (overview)																											
	TEM - Level 5 (reconnaissance)																											
	TEM - Level 4 (intensive)																											
Rare Ecosystem Inventory	REI																											
BCF: Fish and Fish Habitat	summary (FISS)	B							H	H	H	H		H	H		H		M	M			L					
	overview (1:50,000)	C								M	M	H		M			L											
	reconnaisance (1:20,000)	B										H			M		H		M	H			H		M	M	M	M
	Intensive (1:5,000)	B										L							H	L				H			H	H
	species / population inv	C								H		H	H	H			H			H								
	lake classification	n/d												n/d			n/d		n/d				n/d	n/d				
Water Quality/Quantity	water quantity inventory	C							L				M	M	L	M	M		M	L							M	
	water use inv. (comm.w/s)	C											M	M	L	M	M	M					H	L	M		L	
	water quality inventory	C											M	M	L	M	M	M	M		L		L		M		L	
Wildlife and Wildlife Habitat	BEI interpretations	C							L	H	L	L		H	M	H	H											
	TEM/PEM interpretations	nd								M		L		H		H	H			H		H						
	species presence	B							L	H		H	H	H	M	M						H						
	species relative abundance	C										H	M									H						
	species absolute abundance	C									H																	
	rare & endangered species	C							L	H	L	H	H	H	H	M	H		H	H		L	H	H	L	H		

9.1.2 MELP Assessment of Inventory Status Based on the Business Needs of the Management Area

Wildlife and Wildlife Habitat Inventories

General Approach

The Wildlife Section of the Ministry of Environment, Skeena Region has addressed the Wildlife and Wildlife Habitat Inventory section of the Forest Resources Inventories chapter, primarily in a workshop session. Our approach has been as follows:

1. We considered the title, Forest Resources Inventories, to be too restrictive. We have considered all species whether or not they inhabit primarily forested habitats.
2. The primary format for submitting information, the "Table 2: Inventory Status and Need by Business Driver" of the Guidelines, is too synoptic and general to be of much use for justifying inventory activities. That is because presence, relative abundance and absolute abundance inventories are lumped for all species within a Forest District, and habitat interpretations for all species are also lumped within each Forest District. Consequently, the Status and Importance Ranking of an inventory type is an amalgamation of information for a diversity of species, and individual inventory initiatives are lost from the picture. Our approach has been to submit a Table 2 for each Forest District, and to augment those with a Regional listing of inventory needs at the species population level, summarized in Table 1: "Detailed Wildlife Inventory Needs -- Skeena Region".
3. There is inevitably overlap in some of the information in Table 1 and the information in the SSFM chapter of the RMP. We have not attempted to segregate these two sets of information, other than to leave Ungulate Winter Range issues exclusively within the SSFM chapter.

Table 1

We have itemized our wildlife inventory needs in Table 1. For the most part, those wildlife species needing inventory are classified as yellow, red or blue listed. In addition, some were included because their distribution and classification in the Region is poorly understood (e.g., many Invertebrates), or they are species which warrant inventory because they are harvested but rarely receive attention because of the perception that the harvesting has low impact (e.g. Furbearers). Most needs are assessed within species, at the population level of detail.

All ratings of relative priority, in particular, and also other information, should be subject to annual review. Populations that have recently had an inventory are generally ranked Low in priority, but may well revert to Moderate or High as time since the last inventory increases.

There are a number of potential weaknesses in the Table. We have not had enough time to include adequate detail for all red and blue listed species, furbearers or poorly known species groups. All these need more attention in subsequent years. Cost estimates are potentially inaccurate, and for some cases are not presented because of a lack of information. Although good as a first approximation, these cost estimates will need to be revisited when funding opportunities arise, because costs may change markedly over time.

Table 2

The following issues have arisen in filling out the Table 2 for each Forest District:

1. Species absolute abundance needs to be added to the list of inventory needs under First Nations Treaty Negotiations, because the question of harvest allocation of a quantified population is central to these negotiations. We have added the appropriate cell to the Table 2 matrix.
2. There is no place to itemize the need for inventory of species absolute abundance in management of harvest of hunted species. Such inventories are integral to ensuring conservation of these harvested populations, so there should be a policy-driven, Regional or Sub-Regional business driver added to deal with this need. We have not done this in the Table 2 submitted, but have considered the issue in Table 1.
3. TEM and PEM habitat interpretations ideally should be linked to the TSR business driver, because such interpretations on an ecosystem habitat layer are key to habitat supply modelling. We have not added this cell, because habitat supply modelling is not currently an inventory type, though it needs to be in the near future.

We have also made the following interpretations when filling out these tables:

1. CORE processes are not in place or scheduled for the Skeena Region, so issues related to this business driver were consistently rated “Low”.
2. For Forest Districts with LRMPs already in place, we frequently downgraded the need for certain inventory types, unless they were of particular value for monitoring LRMP implementation.

9.2 FRI--Lakes Forest District

9.2.1 Information Table

See Lakes Forest District section in SSFM component.

9.2.2 District Assessment of Inventory Status Based on the Business Needs of the Management Area

See Lakes Forest District section in SSFM component.

9.3 *FRI--Morice Forest District*

9.3.1 Information Table

Table 2: Inventory Status and Need by Business Driver				Business Driver																										
Region: Prince Rupert , District: Morice				International			National			Strategic				Reg/Sub-Reg			Local							Operational Planning Regulations						
Inventory	**Type (Intensity)**	**Ric Stndrd**	**Stat**	Convention on Biological Diversity	Kyoto Protocol	Criteria + Indicators	National Forest Strategy	Canadian Biodiversity Strategy	National Forest Inventory	Land Use Charter (CORE)	Protected Areas Strategy Process	First Nations Treaty Negotiations	Identified Wildlife Management Strategy	Regional Land Use Planning	LRMP	Timber Supply Review on TSA's	Resource Management Zones	Landscape Units	Watershed Assessments	Riparian Assessments	Sensitive Areas	Recreation Features Sites	Ungulate Winter Ranges	Forest Development Plans	Silviculture Prescriptions	Range Use Plans	Stand Management Prescriptions	Road Design Regulations	Harvesting Regulations	Comments
Agriculture	Agricultural Potential	District	B												L		L	L								H				in PAMAP at 1:250000
Agriculture	Soils	Anecdotal	C																							H				hard copy in library - partial
	Soil capability	MoA	C																							H				in WO territory. Approved by Agriculture . Partial - in PAMAP
Archaeology	AIS	Arc Brnch	C																					H	H					as part of AOA model and in Morrison in ArcInfo
	AOA	Arc Brnch	C																					H	H					currently being revised via FRBC project
	Archaeological sites	Arc Brnch	B																					H	H		H		H	confidential layer - updating coverage with Anecdotal project
BCF Fish & Hab.	Intensive (1:5,000)																													
	lake classification																													
	overview (1:50,000)																													
	reconnaisance (1:20,000)																													
	species / population inv																													
	Stream habitat																													
	summary (FISS)																													
Biodiversity	BEC's	RLUS	A												L	L		L												approved spring 2000
	Broad Ecosystem inventory		nd																											?
	Ecoreg mapping interp	MOE	A																											?
	Ecosections	MOE	A																											in DSC in Arc
	Forest Ecosystem Networks	District	C												H	H	H	H						H	H					done in 1996. Not approved by DM
	NDT/Bec	Yes	A								L			L	L	-	L	L					L	L	L		L			Big Bec in DSC
	Patch size	Dstr/LUPG	B/C												H	H		H						H	H					in discussion with Licensee's
	Rare Ecosystem Inventory	Dstr/LUPG	ND								H	H	H		H	L	L	H	H	H			H	H	H	H	H		H	SSFM rated as high priority, to come with PEM —
	Representative	Dstr/LUPG	ND												H			H			H									based on fc +licensee data in DSC
	Seral stage	Dstr/LUPG	B												M		M	M			M		M	M	M					in fc, have licensee data
	WTP's	Dstr/LUPG	A															L						L	L					
Ecosys. Mapping	PEM - Level 1 (overview)	Yes	NA																											?
	PEM - Level 2 (detailed)	Yes	A								L	L	L	L	L	L	L	L	L	L	L		L	L	L	L	L			due March 31, 2001 , DSC
	Terr. Ecosystem Mapping	Yes	C												L		L	L			M		M		M	L	L			Windstead, Morrison-Gosnel are partial
	TEM - Level 4 (intensive)	Yes	NA																											?
	TEM - Level 5 (reconnaissance)	Yes	NA																											?
	TEM - Level R (overview)	Yes	NA																											?
First Nations	Cultural Heritage Resources	District	C								H	H			H		H	H			H	H		H	H	H				ongoing
	FN territories	District	B									M			M			L						H						in hard copy, need digital from WO
	TU sites	District	C									H			H		H				H	H		H	H	H	H			ongoing, selected FN coverage
	WO-house territories	District	C								H	H			H			H			H	H		H	H	H				ongoing, selected FN coverage

Table 2: Inventory Status and Need by Business Driver				Business Driver																										
Region: Prince Rupert , District: Monce				International			National			Strategic				Reg/Sub-Reg			Local							Operational Planning Regulations						
Inventory	Type (Intensity)	Ric Stndrd	Stat	Convention on Biological Diversity	Kyoto Protocol	Criteria + Indicators	National Forest Strategy	Canadian Biodiversity Strategy	National Forest Inventory	Land Use Charter (CORE)	Protected Areas Strategy Process	First Nations Treaty Negotiations	Identified Wildlife Management Strategy	Regional Land Use Planning	LRMP	Timber Supply Review on TSA's	Resource Management Zones	Landscape Units	Watershed Assessments	Riparian Assessments	Sensitive Areas	Recreation Features Sites	Ungulate Winter Ranges	Forest Development Plans	Silviculture Prescriptions	Range Use Plans	Stand Management Prescriptions	Road Design Regulations	Harvesting Regulations	Comments
Fish	Bull Trout	Yes	ND										H		H	H	H	H			H			H	H		H			CRII project for 2000 - high priority
	Fish Habitat Inventory	Yes	ND										H		H	H	H	H			H			H	H		H			FRBC project multi year - high priority
Forest Cover	Forest Cover	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			ongoing, Levels 5,6,9,10,11,16,18
	Cadastre	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			Level 7
	Inventory calls/samples	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			Level 14
	Neat lines	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			Level 62
	Ownership	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			Level 31
	Provincial Forest	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			Level 34
	PSYU	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			Level 28
	Public Utilities	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			Level 8
	Region/Compartment	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			Level 23
	TSA/TSB Boundary	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			Level 27
	Municipale Boundary	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			Level 7
	Agricultural Land Reserve	Yes	A								M	M	L		M	M	M	M		M	M		M	M	M	M	M			in FC1 and Atlas, Level 13
Forest Health	forest health assessment	OPR	B													M								L	L		L			
	pest incidence surveys	OPR	B																					L	L		L			
	planning hazard and risk	District	B											M	M		M	M		M	M	M	M	M	M		M			based on FI, DSC, district specific
Growth and Yield	growth model	SSFM	nd																											
	data integrity	SSFM	B												H	H														remeasurement of plots - SSFM rated as high priority
	site productivity assessment	District	B												L	L														SSFB rated as a low priority
Information Mngt	transfer of research info	SSFM	C																											SSFM parking lot
	One data model	SSFM	C													H	H	H						H						SSFB rated as a low priority - to consolidate data standards in TSA
Minerals	Mineral Occurences	MELPR	B								L		L		L		L	L			L	L	L	L						DSC
	Mineral Potential	MELPR	B								L			L	L		L	L												hard copy maps 1:250000
PAS	PAS	MOF/MOE	B								L	L	L	L	L		L	L			L	L	L	L	L	L	L			Cabinet approved study areas
Planning	Comm. Forest Boundaries -G	District	nd												L			L						L	L					not a legal tenure
	Comm. Forest Boundaries -H	District	B												L			L						L	L					not a legal tenure
	LRMP - Nadina	District	A												L	L	L	L	L					L						SMAP done, 5.4c MOFA plan
	LRUP - Morice	District	A												L	L	L	L	L					L						5.4c MOFA plan
	LU boundaries	MOF/MOE	A												L	L	L	L						L						DSC
Range	Range - tenures	District	B																											Level 43, check with Glen for more current info
	range ecosystem inventory	District	nd												M		M	M								M				Check with Glen, hard copy of plots
	Range improvements	District	B																					M	M	M	M			Level 15
Recreation	Karst reconnaissance		nd																											1999 re-inventory, DSC
	recreation features	Yes	A								L	L		L	L	L	L				L	L		L	L	L				
	Designated Areas	OPR	nd																											hard copy, 1:250000
	District of Houston Parks	District	C																											
	Wilderness Areas	OPR	nd																											1999 re-inventory, DSC
	rec. opportunity spectrum	Yes	A								L	L		L	L	L	L				L	L								SSFM rated as moderate
	Strategic Plan	Prov. Rec	nd																											hard copy 1:250000
	Tourism	District	C									M		M	M		M	M			M	M		M	M	M	M			
Soils	Soils	District	C																						L		L	L		capability, partial coverage 1:50 and 1:20

9.3 FRI--Morice Forest District

9.3.1 Information Table

Table 2: Inventory Status and Need by Business Driver				Business Driver																										
Region: Prince Rupert District: Morice				International			National			Strategic				Reg Sub-Reg			Local							Operational Planning Regulations						
Inventory	Type (Intensity)	Ric Stndrd	Stat	Convention on Biological Diversity	Kyoto Protocol	Criteria + Indicators	National Forest Strategy	Canadian Biodiversity Strategy	National Forest Inventory	Land Use Charter (CORE)	Protected Areas Strategy Process	First Nations Treaty Negotiations	Identified Wildlife Management Strategy	Regional Land Use Planning	LRMP	Timber Supply Review on TSA's	Resource Management Zones	Landscape Units	Watershed Assessments	Riparian Assessments	Sensitive Areas	Recreation Features Sites	Ungulate Winter Ranges	Forest Development Plans	Silviculture Prescriptions	Range Use Plans	Stand Management Prescriptions	Road Design Regulations	Harvesting Regulations	Comments
Agriculture	[illegible]	[illegible]	B												L		L	L								H				[illegible]
Agriculture	[illegible]	[illegible]	C																							H				[illegible]
	[illegible]	[illegible]	C																							H				[illegible]
Archaeology	[illegible]	[illegible]	C																					H	H					[illegible]
	[illegible]	[illegible]	C																					H	H					[illegible]
	[illegible]	[illegible]	B																					H	H		H		H	[illegible]
BCF Fish & Hab	[illegible]																													
	[illegible]																													
	[illegible]																													
	[illegible]																													
	[illegible]																													
	[illegible]																													
	[illegible]																													
Biodiversity	[illegible]	[illegible]	A												L	L		L												[illegible]
	[illegible]		NA																											
	[illegible]	[illegible]	A																											
	[illegible]	[illegible]	A																											[illegible]
	Forest Ecosystem Networks	[illegible]	C												H	H	H	H						H	H					[illegible]
	[illegible]	[illegible]	A								L			L	L	L	L	L					L	L	L		L			[illegible]
	Patch size	[illegible]	B/C												H	H		H						H	H					[illegible]
	[illegible]	[illegible]	NB								H	H	H		H	L	L	H	H	H			H	H	H	H	H		H	[illegible]
	[illegible]	[illegible]	NB												H			H			H									
	[illegible]	[illegible]	B												M		M	M			M		M	M	M					[illegible]
	[illegible]	[illegible]	A															L						L	L					[illegible]
Ecosys. Mapping	[illegible]	[illegible]	NA																											[illegible]
	[illegible]	[illegible]	A								L	L	L	L	L	L	L	L	L	L	L		L	L	L	L	L			[illegible]
	Terr. Ecosystem Mapping	[illegible]	C												L		L	L			M		M		M	L	L			
	[illegible]	[illegible]	NA																											
	[illegible]	[illegible]	NA																											
	[illegible]	[illegible]	NA																											
First Nations	Cultural Heritage Resources	[illegible]	C								H	H			H		H	H			H	H		H	H	H				[illegible]
	[illegible]	[illegible]	B									M			M			L						H						[illegible]
	[illegible]	[illegible]	C									H			H		H				H	H		H	H	H	H			[illegible]
	[illegible]	[illegible]	C								H	H			H			H			H	H		H	H	H				[illegible]

[illegible]				Business Driver																										
Region: Prince Rupert, District: Morice				International			National			Strategic				Reg Sub-Reg			Local							Operational Planning Regulations						
Inventory	Type (Intensity)	Ric Stndrd	Stat	Convention on Biological Diversity	Kyoto Protocol	Criteria + Indicators	National Forest Strategy	Canadian Biodiversity Strategy	National Forest Inventory	Land Use Charter (CORE)	Protected Areas Strategy Process	First Nations Treaty Negotiations	Identified Wildlife Management Strategy	Regional Land Use Planning	LRMP	Timber Supply Review on TSAs	Resource Management Zones	Landscape Units	Watershed Assessments	Riparian Assessments	Sensitive Areas	Recreation Features Sites	Ungulate Winter Ranges	Forest Development Plans	Silviculture Prescriptions	Range Use Plans	Stand Management Prescriptions	Road Design Regulations	Harvesting Regulations	Comments
Fish	[illegible]	Yes	NS										H		H	H	H	H			H			H	H		H			[illegible] project for 2000, high priority
	Fish Habitat Inventory	Yes	NS										H		H	H	H	H			H			H	H		H			FRBC project multi year, high priority
Forest Cover	Forest Cover	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			ongoing, Levels 5,6,8,10,11,15,16
	Cadastre	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			Level 7
	Inventory Data Samples	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			Level 14
	Neat lines	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			Level 62
	Ownership	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			Level 31
	Provincial Forest	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			Level 34
	PSYU	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			Level 25
	Public Utilities	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			Level 8
	Region Compartment	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			Level 23
	TSA/TSB Boundary	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			Level 27
	Municipal Boundary	Yes	B								M	M	L		M	M	M	M		M	M		M	M	M	M	M			Level 7
	Agricultural Land Reserve	Yes	A								M	M	L		M	M	M	M		M	M		M	M	M	M	M			in FC1 and Atlas, Level 12
Forest Health	forest health assessment	OFR	B													M								L	L		L			
	pest incidence surveys	OFR	B																					L	L		L			
	planning hazard and risk	District	B											M	M		M	M		M	M	M	M	M	M		M			based on fc DSC, district specific
Growth and Yield	growth model	SSFM	nd																											
	data integrity	SSFM	B												H	H														remeasurement of plots - SSFM rated as high priority
	site productivity assessment	District	B												L	L														SSFB rated as a low priority
Information Mngt	transfer of research info	SSFM	C																											SSFM parking lot
	One data model	SSFM	C													H	H	H						H						SSFB rated as a low priority - to consolidate data standards in TSA
Minerals	Mineral Occurrences	MELPR	B								L		L		L		L	L			L	L	L	L						DSC
	Mineral Potential	MELPR	B								L			L	L		L	L												hard copy maps 1:250000
PAS	PAS	MOF/MOE	B								L	L	L	L	L		L	L			L	L	L	L	L	L	L			Cabinet approved study areas
Planning	Comm. Forest Boundaries - B	District	nd												L			L						L	L					not a legal tenure
	Comm. Forest Boundaries - H	District	B												L			L						L	L					not a legal tenure
	LRMP - Nadina	District	A												L	L	L	L	L					L						WAP done, S.4c MOFA plan
	LRUP - Morice	District	A												L	L	L	L	L					L						S.4c MOFA plan
	LU boundaries	MOF/MOE	A												L	L	L	L						L						DSC
Range	Range - tenures	District	B																											Level 83, check with Glen for more current info
	range ecosystem inventory	District	nd												M		M	M								M				Check with Glen. Hard copy of plots
	Range improvements	District	B																					M	M	M	M			Level 15
Recreation	[illegible]		nd																											
	recreation features	Yes	A								L	L		L	L	L	L				L	L		L	L	L				1999 re-inventory, DSC
	Designated Areas	[illegible]	nd																											
	District of Houston Parks	District	C																											hard copy 1:250000
	Wilderness Areas	[illegible]	nd																											
	rec. opportunity spectrum	Yes	A								L	L		L	L	L	L				L	L								1999 re-inventory, DSC
	Strategic Plan	Prov. Rec.	nd																											SSFM rated as moderate
	Tourism	District	C									M		M	M		M	M			M	M		M	M	M	M			hard copy 1:250000
Soils	Soil	District	C																						L		L	L		capability, partial coverage 1:50 and 1:20

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	TSM - TS Field Assessment	District	B																					L		L	L		a couple of SBFEP and licensee areas have been done
	TSM Level C/B/A - detailed																													
	TSM Level D	Yes	A																					L		L	L		
	TSM Level E/D/C reconn.																													
Timber	FDP prop./rec. harv. blks	Licensee	A											H	H	H	H	H	H	H				H	H					Licensee data
	FPC buffers r,l,s,w	District	B										L		L	L	L	L		L	L			L	L	L	L			-
	Lakeshore Managt Zones	District	nd																											SSFM rated as moderate
	Rds (harv, oper, secdy, trails)	District	C								H		H	H	H	H	H	H	H		H	H		H	H			H		district inventory
	Planning cells - Oper. areas	District	A								L	L		L	L	L	L	L			L			L						Licensee data
	Road -buffers	District	A												H	H		H	H						H					-
	TSA boundary	District	A								L	L	L	L	L	L	L	L			L	L	L	L						Timber tenures/ DSC (2 versions)
	Operabl. & Terr. Stab. >60%	District	A									L		L	L	L	L	L	L		L			L	L		L			DSC, part of operability
	TRIM	Yes	A								L			L	L	L	L	L	L		L	L	L	L						TRIM used indirectly as spatial map base
	TRIM - enhanced	Yes	nd								H			H	H	H	H	H	H		H	H	H	H						Trim 2 required
	Woodlots	District	A												H	H	H	H	H		H			H	H		H			DSC complete
Veg. Res. Inv.	depletion update	MOF	nd								H	H		H	H	H	H	H					H	H		H	H			needed
	ground sampling (full VRI)	MOF	nd								H	H		H	H	H	H	H					H	H		H	H			needed
	ground sampling (timber)	MOF	nd								H	H		H	H	H	H	H					H	H		H	H			needed
	orthophotos	MOF	nd								H	H		H	H	H	H	H					H	H		H	H			SSFM rated as moderate
	new photo estimation	MOF	nd								H	H		H	H	H	H	H					H	H		H	H			needed
	data quality	MOF	nd								H	H		H	H	H	H	H					H	H		H	H			SSFM rated as a low priority
	retrofit to VRI standards	MOF	nd								H	H		H	H	H	H	H					H	H		H	H			needed
Visual	Scenic Areas	MOF	C											M	M	M	M	M						M	M					DSC, ongoing, made known to licensee's
	VQC's	MOF	B											M	M	M	M	M						M	M					DSC, ongoing, needs field confirmation
	VQO's	MOF	B											M	M	M	M	M						M	M					DSC, ongoing
Water Qual/Quant	Temp. Sensitive streams	District	C											M	M	M	M	M	M	M	M			M	M	M	M			DSC, Nadina LU, SSFM rated as moderate priority
	Water Licences	MOE	B															M	M					M	M	M	M			DSC, updated by MOE
	water quantity inventory		nd																											
	water use inv. (comm w/s)		nd																											
	Watershed - IWAP	IWAP	B											[illegible]	M	M	M	M	M					M	M	M	M			DSC, for Nadina LU
Wildlife & Habitat	Caribou	MOE	nd									H	H	H	H	H	H	H			H		H	H	H	H	H			
	Fisher	Yes	nd									H	H	H	H	H	H	H			H			H	H	H	H			SSFM rated as a low priority
	Goshawk	Yes	nd									H	H	H	H	H	H	H			H			H	H	H	H			SSFM rated as high priority
	Grizzly Bear	Yes	nd									H	H	H	H	H	H	H			H			H	H	H	H			SSFM rated as high priority
	Guide Territories	MOE	C									H	H	H	H	H	H	H			H		H	H	H	H	H			DSC, updated by MOE
	Habitat Units	District	B									H	H	H	H	H	H	H			H			H	H	H	H			
	Marten Habitat	Yes	nd									H	H	H	H	H	H	H			H			H	H	H	H			SSFM rated as moderate priority
	Mtn. Goat	MOE	nd									H	H	H	H	H	H	H			H			H	H	H	H			DSC,SSFM rated as high priority
	rare & endangered species	Yes	nd									H	H	H	H	H	H	H			H			H	H	H	H			
	Red and Blue listed species	Yes	nd									H	H	H	H	H	H	H			H			H	H	H	H			SSFM rated as high priority
	species absolute abundance	MOE	nd									H	H	H	H	H	H	H			H			H	H	H	H			
	species presence	MOE	nd									H	H	H	H	H	H	H			H			H	H	H	H			

Table 2: Inventory Status and Need by Business Driver				Business Driver																										
Region: Prince Rupert , District: Morice				International			National			Strategic				Reg/Sub-Reg			Local							Operational Planning Regulations						
Inventory	Type (Intensity)	Ric Stndrd	Stat	Convention on Biological Diversity	Kyoto Protocol	Criteria + Indicators	National Forest Strategy	Canadian Biodiversity Strategy	National Forest Inventory	Land Use Charter (CORE)	Protected Areas Strategy Process	First Nations Treaty Negotiations	Identified Wildlife Management Strategy	Regional Land Use Planning	LRMP	Timber Supply Review on TSA's	Resource Management Zones	Landscape Units	Watershed Assessments	Riparian Assessments	Sensitive Areas	Recreation Features, Sites	Ungulate Winter Ranges	Forest Development Plans	Silviculture Prescriptions	Range Use Plans	Stand Management Prescriptions	Road Design Regulations	Harvesting Regulations	Comments
	species relative abundance	MOE	nd									H	H	H	H	H	H	H			H			H	H	H	H			
	TEM/PEM interpretations	Yes	nd									H	H	H	H	H	H	H			H		H	H	H	H	H			PEM available 2001-TEM done for 1LU+ 2 partial LU's
	Trapper territories	MOE	C									H	H	H	H	H	H	H			H		H	H	H	H	H			DSC updated by MOE
	Ungulate Capability	MOE	C									H	H	H	H	H	H	H			H			H	H	H	H			DSC, hard copy maps, partial coverage. 1:50
	Wildlife areas	MOE	C									H	H	H	H	H	H	H			H		H	H	H	H	H			DSC, needs work
	Winter range	MOF/MOE	nd									H	H	H	H	H	H	H			H		H	H	H	H	H			SSFM rated as moderate priority

*Terrestrial Ecosystem Mapping has an alternative, Predictive Ecosystem Mapping (PEM) with a lower level of intensity of ground truthing. All have RIC standards

Legend:

A = Good status

B = Satisfactory status

C = Poor Status

n/d = not done
n/a = not applicable

H = Inventory is of high improtance to the Business Driver
M = Inventory is of moderate importance to the Business Driver
L = Inventory is of low importance to the Business Driver

▨	Explicitly required by legislation / regulation
☐	Implicitly required by legislation / regulation (interpretation involved)
▨	Needed to set management objectives or for resource management
☐	All or portion of inventory required for planning process
☐	Information not currently required

Table 2: Inventory Status and Need by Business Driver

Region: Prince Rupert , District: Morice

				Business Driver																										
				International			National			Strategic				Reg Sub-Reg			Local							Operational Planning Regulations						
Inventory	Type (Intensity)	Ric Stndrd	Stat	Convention on Biological Diversity	Kyoto Protocol	Criteria + Indicators	National Forest Strategy	Canadian Biodiversity Strategy	National Forest Inventory	Land Use Charter (CORE)	Protected Areas Strategy Process	First Nations Treaty Negotiations	Identified Wildlife Management Strategy	Regional Land Use Planning	LRMP	Timber Supply Review on TSAs	Resource Management Zones	Landscape Units	Watershed Assessments	Riparian Assessments	Sensitive Areas	Recreation Features Sites	Ungulate Winter Ranges	Forest Development Plans	Silviculture Prescriptions	Range Use Plans	Stand Management Prescriptions	Road Design Regulations	Harvesting Regulations	Comments
	TSM - TS Field Assessment	District	B																						L		L	L		a couple of [illegible] and licensee [illegible] have been done
	TSM Level I (E.A.) detailed																													
	TSM Level II	Yes	A																						L		L	L		
	TSM Level 3 [illegible]																													
Timber	FDP prop. res. Xsec. blks	Licensee	A											H	H	H	H	H	H	H				H	H					Licensee data
	FPC buffers r.l.s.a.	District	B										L		L	L	L	L		L	L			L	L	L	L			
	Lakeshore Manag't Zones	District	nd																											SIFM rated as moderate
	Rds (hwy, oper., sectn, trails)	District	C								H		H	H	H	H	H	H	H		H	H		H	H			H		district inventory
	Planning cells / Oper. areas	District	A								L	L		L	L	L	L	L			L			L						Licensee data
	Road buffers	District	A												H	H		H	H						H					?
	TSA boundary	District	A								L	L	L	L	L	L	L	L			L	L	L	L						Timber tenures (2001/2 versions)
	Operab. & Ten. Stat. info	District	A									L		L	L	L	L	L	L		L			L	L		L			DSC: part of operability
	TRIM	Yes	A								L			L	L	L	L	L	L		L	L	L	L						TRIM used indirectly as spatial map base
	TRIM enhanced	Yes	nd								H			H	H	H	H	H	H		H	H	H	H						Trim 2 required
	Woodlots	District	A												H	H	H	H	H		H			H	H		H			DSC complete
Veg. Res. Inv.	depletion update	MOF	nd								H	H		H	H	H	H	H					H	H		H	H			needed
	ground sampling (full VRI)	MOF	nd								H	H		H	H	H	H	H					H	H		H	H			needed
	ground sampling (timber)	MOF	nd								H	H		H	H	H	H	H					H	H		H	H			needed
	orthophotos	MOF	nd								H	H		H	H	H	H	H					H	H		H	H			SIFM rated as moderate
	new photo estimation	MOF	nd								H	H		H	H	H	H	H					H	H		H	H			needed
	data quality	MOF	nd								H	H		H	H	H	H	H					H	H		H	H			SIFM rated as a low priority
	retrofit to VRI standards	MOF	nd								H	H		H	H	H	H	H					H	H		H	H			needed
Visual	Scenic Areas	MOF	C											M	M	M	M	M						M	M					DSC: ongoing, made known to licensees
	VQO's	MOF	B											M	M	M	M	M						M	M					DSC: ongoing, needs field confirmation
	VQO's	MOF	B											M	M	M	M	M						M	M					DSC: ongoing
Water Qual/Quant	Temp. Sensitive streams	District	C											M	M	M	M	M	M	M	M			M	M	M	M			DSC: Nadina LU; SIFM rated as moderate priority
	Water Licences	MOE	B															M	M					M	M	M	M			DSC: updated by MOE
	water quantity inventory		nd																											
	water use inv. (comm. e.b.)		nd																											
	Watershed - IWAP	IWAP	B											M	M	M	M	M	M					M	M	M	M			DSC: for Nadina LU
Wildlife & Habitat	Caribou	MOE	nd									H	H	H	H	H	H	H			H		H	H	H	H	H			
	Fisher	Yes	nd									H	H	H	H	H	H	H			H			H	H	H	H			SIFM rated as a low priority
	Goshawk	Yes	nd									H	H	H	H	H	H	H			H			H	H	H	H			SIFM rated as high priority
	Grizzly Bear	Yes	nd									H	H	H	H	H	H	H			H			H	H	H	H			SIFM rated as high priority
	Guide Territories	MOE	C									H	H	H	H	H	H	H			H		H	H	H	H	H			DSC: updated by MOE
	Habitat Units	District	B									H	H	H	H	H	H	H			H			H	H	H	H			
	Marten Habitat	Yes	nd									H	H	H	H	H	H	H			H			H	H	H	H			SIFM rated as moderate priority
	Mtn. Goat	MOE	nd									H	H	H	H	H	H	H			H			H	H	H	H			DSC: SIFM rated as high priority
	rare & endangered species	Yes	nd									H	H	H	H	H	H	H			H			H	H	H	H			
	Red and Blue listed species	Yes	nd									H	H	H	H	H	H	H			H			H	H	H	H			SIFM rated as high priority
	species absolute abundance	MOE	nd									H	H	H	H	H	H	H			H			H	H	H	H			
	species presence	MOE	nd									H	H	H	H	H	H	H			H			H	H	H	H			

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	species relative abundance	MOE	nd									H	H	H	H	H	H	H			H			H	H	H	H			
	TEM/PEM interpretations	Yes	nd									H	H	H	H	H	H	H			H		H	H	H	H	H			PEM available 2001-TEM done for 1LU+ 2 partial LU's
	Trapper territories	MOE	c									H	H	H	H	H	H	H			H		H	H	H	H	H			DSC updated by MOF
	Ungulate Capability	MOE	c									H	H	H	H	H	H	H			H			H	H	H	H			DSC, hard copy maps, partial coverage 1:50
	Wildlife areas	MOE	c									H	H	H	H	H	H	H			H		H	H	H	H	H			DSC, needs work
	Winter range	MOE MOE	nd									H	H	H	H	H	H	H			H		H	H	H	H	H			SSFM rated as moderate priority

*Terrestrial Ecosystem Mapping has an alternative, Predictive Ecosystem Mapping (PEM)
with a lower level of intensity of ground truthing. All have RIC standards

Legend:

A = Good status

B = Satisfactory status

C = Poor Status

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Explicitly required by legislation / regulation
Implicitly required by legislation / regulation (interpretation involved)
Needed to set management objectives or for resource management
All or portion of inventory required for planning process
Information not currently required

9.3.2 District Assessment of Inventory Status Based on the Business Needs of the Management Area

Agriculture

The existing knowledge of agricultural potential in the Morice TSA is limited and exists as a 1:250000 hard copy map. This information is considered important to the Range program although it has been rated as having a low importance to the business driver overall. Agricultural soils information has been completed by the District Agriculturist and the WO as a partial coverage for the TSA and exists digitally in PAMAP and will be converted to ArcInfo by the Data Service Centre (DSC). Additional soils information is in book form in the library.

Archaeology

The need for identification and improvement in the knowledge of First Nation's features is an issue documented within the SSFM component both in our previous and current RMP.

Archaeological Overview Assessment (AOA)

In 1998, an Archaeological Inventory and Archaeological Overview Assessment Refinement was completed for the Morice TSA to support operational and strategic planning.

Existing archaeological records are focused on valley bottoms and no significant studies have been completed on up-slopes which has been identified as a weakness which has been accommodated by existing AOA models. Additional information and new modeling approaches are required to improve the predictive capability of the AOA model used within the Morice TSA. A good AOA has been generally identified as being of High/Moderate importance throughout a wide range of the strategic and operational planning business drivers.

This district is actively following a phased plan to complete a spatial (detailed) AOA for the Morice TSA. This project is expected to provide significant improvements to existing AOA models and will provide information/approaches to modeling of value to other districts.

Phase I: Gather detailed information from office files and previous field assessments – FRBC funded. This information will be used to help calibrate the model. To be completed by the fall this year (2000)

Phase II: Include Morrison AIS to provide important data to calibrate AOA. This will be done this fall(2000). Review this information with interested First Nations and Licensee's.

Phase III: Prepare a RFP to Archaeological consultants and include information from previous model development and gap analysis to develop/calibrate a predictive model for the Morice TSA (2000 - 2001).

Phase IV: Provide 1:50,000 (detailed) AOA mapping for use by FN's, licensee's and agencies (2001).

It is anticipated that the AOA model will provide the detail necessary for operational needs and strategic planning and will be revised every few years or as needed.

AIS

An AIS has been identified as of High importance in support of a wide range of strategic/operational planning business drivers. The need for an AIS has been identified in the Morrison by the Lake Babine Nation, as an issue to be addressed by the MoF. Additionally, an AIS has been completed as part of the previous AOA model refinement.

It may be necessary to complete other AIS's as and where needed to support FN's issues and in support of calibrating the district AOA model.

Biodiversity

At this time there are a number of elements associated with biodiversity. Most of the elements identified range between High to low importance. Generally speaking, detailed information is lacking and the district would like to improve the quality and quantity of all elements associated with biodiversity.

Ecosystem Mapping

Ecosystem mapping is considered to be lacking in the district. The existing inventory includes one Landscape Unit with TEM, completed at 1:50000 scale and portions of two landscape units; a few mapsheets at 1:20000 completed for the Morrison and Gosnel. Predictive Ecosystem Mapping (PEM) comprising 142 mapsheets will be completed by March 2001. Completion of this inventory will provide a much-needed ecological inventory for the Morice district.

Predictive Ecosystem Mapping (PEM)

PEM methods are consistent with and complementary to traditional TEM procedures, while providing large-scale 1:20,000 ecosystem maps more quickly and cost effectively.

PEM is a computer model which utilizes various TRIM/inventory components to generate ecologically based landscape units, and makes site series predictions with a high or known degree of reliability. PEM is undergoing testing in the Telkwa Study Area within the Bulkley TSA and field checking of results is underway to verify outputs.

PEM has been identified as being of high importance in support of the district business drivers for strategic and operational planning initiatives.

The SSFM component of the district RMP has outlined a number of issues dependent on ecological based mapping. Issues include:

- identification and management of habitat requirements required to support First Nations traditional uses on the land,

- habitat supply interpretations required in support of wildlife and/or endangered species habitat identification and management,
- ecologically based spatial analysis of the impacts of current policy and practice on existing forest resources, including projections of future supply estimates,
- development of site productivity estimates in support of forest investment strategies and options, and
- assessment and monitoring of biodiversity components, and their impact on resource sustainability, certification and accountability reporting initiatives.

The district intends to proceed with the acquisition of PEM as soon as it can be demonstrated capable of providing acceptable outputs.

Forest Health

The most effective means to undertake Bark Beetle Hazard and Risk assessments (to predict and assess the impact of current infestations) has been and is currently being refined in the District. This work has been in concert with Regional, District and licensee staff. New methodologies are being proposed which may improve upon our current approaches to allow better management of the bark beetle infestations. The district considers this work a moderate priority and with adequate funding, our ability to track and plan for bark beetle infestations, with licensee's and FN's will be maintained.

First Nations (FN)

All inventories associated with FN's are considered High importance. The district is currently working with the WO to complete LU/WO information collection. Additionally, the district is collecting all 'in-house' FN information and will be digitizing and mapping the information for use with the AOA model. This information will be made available to the respective FN's group once completed and is considered confidential.

The district considers that the existing information collections through consultation, ad hoc meetings and the LU planning process to be adequate at this time and will continue to encourage communication and working relationships will all FN's.

Traditional Use Study (TUS) Sites

The Wet'sewet'en TUS provides extremely valuable information, which is shared on a consultative base. Other first nations with traditional territories within the TSA have shown an interest in completing a TUS and the district strongly supports their efforts.

Fish

The existing information on fish and fish habitat is almost non-existent in the district for most of the smaller streams. The district has defaulted to a standard S4 designation on the FDP's for lack of available information on fish and fish streams. Fish information will be forthcoming from FRBC in the next year or two. The need for this information is high and could feed into the IFPA and LRMP processes.

Forest Cover (FC)

The need for good FC data can not be overstated. FC drives most of the operational and strategic planning for the MoF, licensee's, agencies and FN's groups. The existing FC data is a minimum of 2 years out of data and in some cases more that 2 years. It has been rated as moderate with some attributes as low importance to the Business driver. It is felt that this inventory is extremely important and that resources be expended to ensure that the FC standards are maintained or surpassed in terms of data quality.

Forest Health Assessments – Bark Beetles

Forest Health Inventories are a vital component of forest management in the Morice TSA. They are of moderate importance to the district business needs and in the coming years will be one of the main drivers of forest harvesting. The district has developed a hazard and risk assessment mapping convention, which has been adopted by the licensees and neighbouring districts. Maintaining the data quality is essential to be able to assess the hazard and risk to available timber. Maintaining and enhancing available resources to enable the district to improve on our hazard and risk assessments is essential ongoing forest management planning processes.

Pest Incidence Surveys

Pest Incidence Surveys can be considered a subset of Forest Health assessments. Pest incidence surveys are seen as having a Low priority as a business driver. Ensuring that resources are expended to complete incidence surveys is essential if the district is to keep on top of forest health problems.

Growth and Yield

Growth and Yield data collection and the information it provides is used to calibrate many of our analysis tools. Growth and yield projections are a component of our Forest Cover Inventory volume estimates. Growth and Yield (inputs/outputs) are a critical component of most stand modelling/decision making tools used to support strategic and operational planning initiatives undertaken in the Morice TSA.

Good measures of site productivity are considered of high importance to data analysis results to support data integrity, and subsequently affect many of our decision making processes.

There are a number of growth and yield related issues identified in the SSFM component of the RMP, such as:

- remeasurement and new plot establishment and the timely transfer of this information to licensees for analysis purposes. This is considered a high SSFM priority issue.
- acquiring district wide orthophoto coverage to improve the forest cover inventory, growth and yield, strategic and operational planning accuracy. This is considered a moderate SSFM priority issue.

Information Management

There are a number of information management related issues identified in the SSFM component of the RMP, such as:

- the timely transfer of research and technological information into the hands of licensee's, FN's and the public. This is considered a high SSFM priority issue.
- development of one data model for the district to allow for management of the forest inventory with consistent standards and criteria for all users. This is considered a low SSFM priority issue.

Information management is considered by the district as a high priority to the business driver and needs further work.

Minerals

The Ministry of Energy and Mines (MEM) provides mineral tenures and occurrences for the district and also updates the information. The data is available to the DSC and is considered by the district to be a good inventory and as such is rated as low importance to improving the information.

Protected Area Strategy

Regional MoF has done extensive work on preparing the PAS gap analysis and is considered by the district to be a good inventory. The data is available to the DSC. The district has rated this inventory as low importance in terms of improving the information.

Planning

A number of higher level plans pursuant to Section 4 of the MOFA have been completed for the Morice TSA. These include 2 LRUP's, 2 Community Forest boundaries. The existing LRUP and Community Forest boundaries will be included in future Landscape Unit Plans. The district has rated these as a low priority.

The current Landscape Unit boundaries have been tied to TRIM heights of land and were used in the Regional Landscape Unit strategy completed in 1999. The district considers these boundaries to be accurate and is not anticipating major changes in the near future. The district has rated these as a low priority and will be using these boundaries in future LU plans.

Range Tenures

The existing range tenures have recently been digitized. It is anticipated that the digital data will be included in the Morice data warehouse with the DSC. The district considers this to be a low priority and will be using this information for strategic and operational planning.

Range Ecosystem Inventory

The district has a number of established Permanent Habitat Monitoring Transects/Plots, which are re-measured on a 3-year cyclical basis. On average, plots within the Morice TSA are re-measured annually with the assistance of the Region. This is important baseline data that monitors/audits the impacts of range use and should be maintained. This is traditionally accomplished using a co-op student or similar Regional full-time equivalent (FTE) allocation.

This inventory has been identified as having moderate importance in support of ongoing planning processes.

Range Improvements

Range cultural inventories (range improvements/structures) are maintained as a coverage within the Forest Cover (FIP) file. This inventory has historically been updated on a 3 year cyclical basis. The last update was completed in 1995. Because of the moderate size of the range program within the Morice TSA and the data's program specific value, this inventory is viewed as being of low importance to other planning processes. This inventory will continue to be maintained and updated in-house as required.

Recreation

The recreation features within the Morice TSA are considered significant locally, provincially and internationally. A recreation inventory was completed in 1997 to RIC standards and is considered a good inventory. The inventory is considered in operational and strategic planning processes and a new inventory is not anticipated for some time. Therefore, the associated inventories have been ranked as being of low importance as a business driver.

Karst

To our knowledge there are no karst features within the Morice TSA. They have no impact on the district business drivers and have not been ranked. Reconnaissance Karst Mapping and Inventory for British Columbia testing the KISP Methodology has not been completed in the district. Until the inventory has been completed, it is assumed that the likelihood of finding karst features are low to nil. Based on our existing knowledge and reconnaissance level karst potential mapping, we do not anticipate a need for detailed karst inventories in the Morice TSA.

Recreation Opportunity

A Recreation Opportunity Spectrum Inventory for the Morice TSA was completed along with the recreational features inventory and the district considers the inventory status to be good. The district considers the inventory as being of low importance as a business driver and will be reassessed when the next recreational inventory is completed.

Strategic Plan - Recreation

A strategic recreation plan would incorporate, under a broad community vision, all the recreation activities, values, and opportunities for the district. The strategic plan would also detail out all the operational activities needed to address recreation management needs in the Morice.

The SSFM plan has identified this as a moderate priority.

Tourism

A map identifying tourism potential in 1997 was generated by North by Northwest (in Smithers), to assist with the Regional Landscape Unit Strategy for the Morice District. The map is at 1:250000 scale and is in hard copy. The accuracy of the data is unknown. The information may need to be updated in the future and therefore the district considered it a moderate priority for improving the information.

Terrain Stability Mapping (TSM)

In 1998, a TSM Level D was completed for the Morice district. This inventory was completed as part of the requirement by the Chief Forester for TSR2. The assessment compared TSM with the existing ESAs to check the validity of the netdown for ESAs. It was found that the ESA 1s (high) were accurately identified while ESA 2's (moderate) were not reflected in the TSM inventory. The reviewers believe that ESA moderate for soils are important features and require netdowns for TSR therefore the ESA inventory will be used in TSR 2 not the TSM inventory. These inventories are presently considered to be satisfactory as overviews and provide direction for the identification of the more sensitive landscapes which require completion of detailed TSM.

The information was considered to be the most accurate information available for ESA's. The inventory was considered to be good and the district rated the inventory as a Low importance to the business driver.

TS Field Assessment

Detailed 'Level C' TSM has been completed by licensees, in a few areas, as identified using Reconnaissance level inventories or during the FDP process. Detailed TSM will continue on critical areas as they are identified in the field. They are considered to be of high importance at the operational planning level.

Timber

There are a number of elements associated with the timber inventory. Much of the forest development plan block and road information comes from the major licensees, woodlots and the SBFEP. The licensees and SBFEP are now conversant with ArcInfo GIS providing consistent standards for use of digital data. A number of digital standards (regional and district specific) have been worked out between the MoF and the licensees.

The district considers information from licensees to be important for data analysis in support of operational and strategic planning processes (meeting seral and patch targets, in support of TSR 2 and other planning initiatives) and has rated the information from licensee's with respect to blocks and roads as a high priority. Further discussion is needed with the licensees regarding submission of digital ArcInfo information to support FDP's, amendments and other Forest Practices Code requirements.

Vegetation Resources Inventory (VRI)

The Morice TSA has had 109 of the 142 mapsheets re-inventoried in 1991. The 33 remaining maps have a 1973 inventory date. Therefore, it is viewed as a traditional Timber Inventory. As such, it predates the current Land Classification Scheme and current INCOSADA standards. This inventory is commonly referred to as the Forest Cover and includes results of forest resource depletion and stand management activity on resource attributes.

A TSA re-inventory is done every 10-20 years. Before a new VRI or VRI retrofit can be done it will be necessary to develop a new VRI Plan for the Morice TSA portion of the district. This process replaces the previous Statistical Audit and Pre-inventory Analysis process to determine provincial funding priorities based on established need.

A statistical audit completed for the Morice TSA in 1998 showed that the Inventory was acceptable for use at the TSA level. In other words there was no significant difference between the means of the inventory-based estimates and attributed volumes and the ground-based measures of attributes and volumes.

The SSFM component of the RMP has identified the need for the district to get positioned for a VRI, which will require the acquisition of ortho-photography and digital products, which support softcopy technology. Subsequent phases include - re-classification of non-treed polygons and photo-estimates of land attributes required by the current Land Classification Scheme and INCOSADA standard, ground (timber emphasis) based sampling, Statistical Adjustment (to remove any biases created during the photo interpretation phase), net volume adjustment factoring, and within polygon variation sampling.

The Forest Cover inventory is considered a base component of most, if not all our strategic-operational business drivers. A good inventory is of high importance to the district. A new VRI is very expensive and a phased approach to completing a new VRI will only be pursued if analysis of the existing inventory demonstrates that it is not of a sufficiently high standard, or the VRI is consider strategically important by the Region or Resource Inventory Branch.

Depletion Update

The Morice Forest District undertakes depletion updates in-house to pre-VRI standards. The provincial objective is to ensure the Forest Cover depletions are captured on a two year cycle.

Current orthophoto imagery is critical to the in-house update program, as it improves the spatial accuracy of the data capture (especially road locations), validates or checks accuracy of GPS data submissions, and reduces the time it takes to correct any discrepancies in data and to produce the final product.

An accurately updated Forest Cover Inventory is of high importance in support of district business drivers, particularly as we move towards detailed spatial modelling at the Landscape Unit level and utilize outputs as measures of resource sustainability and general performance.

Visual Landscape Inventory

The Morice TSA has satisfactory detailed Landscape Inventories done to current standards. The VQO's have been rolled over in Victoria to VQC's as part of an automatic rollover. The level of inventory work done to the old VQO standard is relatively good but the rollover provides a level of uncertainty. The district has identified this inventory as moderate in importance. Once the VQC's are field verified this fall, a better sense (quality of the information represented by the inventory) of the inventory will be know. Known scenic areas have been identified to licensees.

Water Quality Inventory

Not much is known about temperature sensitive areas throughout the Morice TSA. Currently, only streams identified in the Nadina LRUP have been identified as temperature sensitive. Additional work is being done on the impact of stream vegetation and water temperatures and will provide valuable information on harvesting activities and impacts to temperature sensitive streams in the next few years. This information is considered important by the district as it could impact operational harvesting activities and has been given a moderate rating.

Water licenses are identified and updated by MELP. The district feels that this is a good inventory and has rated this inventory as a moderate importance.

Wildlife and Wildlife Habitat

Wildlife and wildlife habitat information for this district is considered poor and lacking by the district. A number of inventories have been identified by Licensees, MoF and MELP as of high importance and have been rated by SSFM as high as well. The following species have been identified as important inventories to the business driver and are listed below.

High priority: Caribou, Goshawk, Grizzly Bear, Mtn Goat and Red and Blue listed species

Moderate priority: Martin

Low priority: Fisher

Note that the current date of a number of the inventories listed above may be found by reviewing the LU Data Dictionary created by the NWDSC July 2000.

9.4 FRI--Bulkley Component

9.4.1 Information Table

Table 2: Inventory Status and Need by Business Driver

Region: **Prince Rupert** , District: **Bulkley / Cassiar**

Inventory	Type (Intensity)	Bulkley Status	Cassiar Status	Business Driver																									
				International			National			Strategic				Reg/Sub-Reg			Local							Operational Planning Regs					
				Conventio n on	Kyoto	Criteria +	National Forest	Canadian Biodiversit	National Forest	Land Use Charter	Protected Areas	First Nations	Identified Wildlife	Regional Land Use	LRMP	Timber Supply	Resource Managem	Landscape Units	Watershed Assessme	Riparian	Sensitive	Recreation Features,	Ungulate Winter	Forest Developm	Silviculture Prescritpio	Range	Stand Managem	Road Design	Harvesting Regulation
Archaeology	AOA	C	A													H	M	H				M		H	H				
	AIS	C	B													M	M	M				M		M	M				
Forest Health	forest health assessment	annual	annual													H	M							H			H		M
	pest incidence surveys	annual	annual													H						H			H		H		M
Karst	reconnaisance	B	C																										
	planning	n/a	n/a																										
Range	range ecosystem inventory	A	B													L		M						L		M			
	range cultural inventory	A	n/d																					L					
Recreation	visual landscape inventory	B	B													H	H	H				H		H	H			H	
	recreation opportunity	A	A														H	H				H							
	recreation features	A	A														H	H				H		H	H				
Terrain (Stability) Mapping (including Soils)	Level E/D/C reconnaisance	B	B													M			H					M					
	Level C/B/A - detailed	B	n/d													M			H										
	TS Field Assessment	A	A																						H				
Traditional Use	TU sites	B	B													H	M	H				H		H	M				
Vegetation Resources Inventory (VRI)	depletion update	n/d	n/d													H		H						L					
	retrofit to VRI standards	n/d	n/d													H		H											
	new photo estimation	n/d	n/d													H								L					
	ground sampling (timber)	n/d	n/d													H		H						L					
	ground sampling (full VRI)	n/d	n/d													H													
Growth and Yield	productivity assessment	B	B													H											H		
	growth model	B	B													H											H		
Ecoregion Mapping	ecoregion interpretations																												
Broad Ecosystem Inventory	BEI															L		M											
Predictive Ecosystem Mapping*	PEM - Level 1 (overview)	n/d	n/d													H		H											
	PEM - Level 2 (detailed)	n/d	n/d													H		H					H						
Terrestrial Ecosystem Mapping*	TEM - Level R (overview)																												
	TEM - Level 5 (reconnaissance)																												
	TEM - Level 4 (intensive)																						H						
Rare Ecosystem Inventory	REI																	H						H	M	H			
BCF: Fish and Fish Habitat	summary (FISS)																							H					
	overview (1:50,000)																												
	reconnaisance (1:20,000)																							H			H		
	Intensive (1:5,000)																								H				
	species / population inv																												
	lake classification																							H	H				

Table 2: Inventory Status and Need by Business Driver

Region: **Prince Rupert** , District: **Bulkley / Cassiar**

				Business Driver																									
				International			National			Strategic				Reg/Sub-Reg			Local							Operational Planning Regs					
Inventory	**Type (Intensity)**	**Bulkley Status**	**Cassiar Status**	Conventio n on	Kyoto	Criteria +	National Forest	Canadian Biodiversit	National Forest	Land Use Charter	Protected Areas	First Nations	Identified Wildlife	Regional Land Use	LRMP	Timber Supply	Resource Managem	Landscape Units	Watershed Assessme	Riparian	Sensitive	Recreation Features,	Ungulate Winter	Forest Developm	Silviculture Prescritpio	Range	Stand Managem	Road Design	Harvesting Regulation
Water Quality/Quantity	water quantity inventory	n/d	n/d														H	H											
	water use inventory (comm w/s)	B	B																H					H	H				
	water quality inventory	n/d	n/d														H	H	H										
Wildlife and Wildlife Habitat	BEI interpretations																												
	TEM/PEM interpretations	n/d	n/d															H						H	M				
	species presence																												
	species relative abundance																												
	species absolute abundance																												
	rare & endangered species																							H	H	H	L		

*Terrestrial Ecosystem Mapping has an alternative. Predictive Ecosystem Mapping (PEM)
with a lower level of intensity of ground truthing. All have RIC standards

Legend:

A = Good status

B = Satisfactory status

C = Poor Status

n/d = not done
n/a = not applicable

H = Inventory is of high improtance to the Business Driver
M = Inventory is of moderate importance to the Business Driver
L = Inventory is of low importance to the Business Driver

Explicitly required by legislation / regulation

Implicitly required by legislation / regulation (interpretation involved)
Needed to set management objectives or for resource management
All or portion of inventory required for planning process
Information not currently required

9.4 *FRI--Bulkley Component*

9.4.1 Information Table

Table 2. Inventory Status and Need by Business Driver

Region: **Prince Rupert**, District: **Bulkley / Cassiar**

Inventory	Type (Intensity)	Bulkley Status	Cassiar Status	Business Driver																									
				International			National			Strategic				Reg/Sub-Reg			Local							Operational Planning Regs					
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Archaeology	AOA	C	A													H	M	H				M		H	H				
	AIS	C	B													M	M	M				M		M	M				
Forest Health	forest health assessment	annual	annual													H	M							H			H		M
	pest incidence surveys	annual	annual													H						H			H		H		M
Karst	reconnaisance	B	C																										
	planning	n/a	n/a																										
Range	range ecosystem inventory	A	B													L		M						L		M			
	range cultural inventory	A	n/d																					L					
Recreation	visual landscape inventory	B	B													H	H	H				H		H	H			H	
	recreation opportunity	A	A														H	H				H							
	recreation features	A	A														H	H				H		H	H				
Terrain (Stability) Mapping (including Soils)	Level E/D/C reconnaisance	B	B													M			H					M					
	Level C/B/A - detailed	B	n/d													M			H										
	TS Field Assessment	A	A																						H				
Traditional Use	TU sites	B	B													H	M	H				H		H	M				
Vegetation Resources Inventory (VRI)	depletion update	n/d	n/d													H		H						L					
	retrofit to VRI standards	n/d	n/d													H		H											
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	ground sampling (timber)	n/d	n/d													H		H						L					
	ground sampling (full VRI)	n/d	n/d													H													
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	growth model	B	B													H											H		
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Predictive Ecosystem Mapping*	PEM - Level 1 (overview)	n/d	n/d													H		H											
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BCF: Fish and Fish Habitat	summary (FISS)																							H					
	overview (1:50,000)																												
	reconnaisance (1:20,000)																							H			H		
	intensive (1:5,000)																								H				
	species / population inv																												
	lake classification																							H	H				

Table 2. Inventory Status and Need by Business Driver Region Prince Rupert , District: **Bulkley / Cassiar**				Business Driver																									
				International			National			Strategic				Reg/Sub-Reg			Local							Operational Planning Regs					
Inventory	**Type (Intensity)**	**Bulkley Status**	**Cassiar Status**	Conventio n on	Kyoto	Criteria +	National Forest	Canadian Biodiversit	National Forest	Land Use Charter	Protected Areas	First Nations	Identified Wildlife	Regional Land Use	LRMP	Timber Supply	Resource Managem	Landscape Units	Watershed Assessme	Riparian	Sensitive	Recreation Features	Ungulate Winter	Forest Developm	Silviculture Prescriptio	Range	Stand Managem	Road Design	Harvesting Regulation
Water Quality/Quantity	water quantity inventory	**n/d**	**n/d**														**H**	**H**											
	water use inventory (comm w/s)	**B**	**B**																**H**					**H**	**H**				
	water quality inventory	**n/d**	**n/d**														**H**	**H**	**H**										
Wildlife and Wildlife Habitat	BEI interpretations																												
	TEM/PEM interpretations	**n/d**	**n/d**															**H**						**H**	**M**				
	species presence																												
	species relative abundance																												
	species absolute abundance																												
	rare & endangered species																							**H**	**H**	**H**	**L**		

*Terrestrial Ecosystem Mapping has an alternative, Predictive Ecosystem Mapping (PEM) with a lower level of intensity of ground truthing. All have RIC standards

Legend:

A = Good status

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H = Inventory is of high improtance to the Business Driver

M = Inventory is of moderate importance to the Business Driver

L = Inventory is of low importance to the Business Driver

	Explicitly required by legislation / regulation
	Implicitly required by legislation / regulation (interpretation involved)
	Needed to set management objectives or for resource management
	All or portion of inventory required for planning process
	Information not currently required

9.4.2 District Assessment of Inventory Status Based on the Business Needs of the Management Area

Archaeology

The need for identification and improvement in the knowledge of First Nation's features is an issue documented within the SSFM component both in our previous and current RMP.

Archaeological Overview Assessment (AOA)

In 1995 a 1:250,000 level AOA was completed for the Bulkley TSA in support of the LRMP.

This level of inventory is too broad to support strategic/operational planning within the operable forest at the Landscape Unit level or lower. Existing archaeological records are focused on valley bottoms and no significant studies have been completed on up-slopes which has been identified as a weakness which has been accommodated by existing AOA models. Additional information and new modeling approaches are required to improve the predictive capability of the AOA model used within the Bulkley TSA. A good AOA has been generally identified as being of High/Moderate importance throughout a wide range of the strategic and operational planning business drivers.

This district is actively following a phased plan to complete a 1:20,000 level (detailed) AOA for the Bulkley TSA. This project is expected to provide significant improvements to existing AOA models and will provide information/approaches to modeling of value to other districts.

Phase I: Information gathering and ground proofing – FRBC funded (2000 - 2001). To be completed by end of this year

Phase II: Complete AIS to provide important data to calibrate AOA (2001 - 2002).

Phase III: Develop/calibrate a predictive model for the Bulkley TSA (2002 - 2003).

Phase IV: Provide 1:20,000 (detailed) AOA mapping (2004 – 2005).

AIS

An AIS has been identified as of Moderate – High importance in support of a wide range of strategic/operational planning business drivers.

The Prince Rupert Region supports AIS where it is used to support the calibration of an AOA.

The districts proposes (see Phase II under AOA above) to complete an AIS in this context.

Forest Health

The most effective means to undertake Bark Beetle Risk and Incident Assessments has been identified as an issue for the Bulkley TSA, and is documented within the SSFM component of the current RMP. Methodologies are being proposed which may improve upon our current approaches to completing the following inventories.

Forest Health Assessment

Forest Health Inventories are a vital component of forest management in the Bulkley TSA. They are therefore of high – moderate importance to the district business needs. Since the procedures are well established and risk management value of having a good inventory is recognized, it is believed that we can continue to operate at historic funding levels. Any decrease in historic funding would be viewed as a serious impediment to ongoing strategic and operational planning processes. (See Part 4: Forest Health Maintenance Component for more details.)

Pest Incidence Surveys

Pest Incidence Surveys can be considered a subset of Forest Health assessments. One cannot do a Forest Health assessment without doing a pest incidence survey. Pest incidence surveys are seen as having a Moderate priority as a business driver due to the linkages with Forest Health assessments. (See Part 4: Forest Health Maintenance Component for more details.)

Karst

To our knowledge there no karst features within the Bulkley TSA and they have no impact on the district business drivers and have not been ranked.

Reconnaissance

Reconnaissance Karst Mapping and Inventory for British Columbia testing the KISP Methodology has provided the district with 1:250,000 potential mapping for 093L, 093M, 094D, and 103I letter-blocks. This reconnaissance level inventory suggests that the likelihood of finding karst features is low to nil.

Planning

Based on our existing knowledge and reconnaissance level karst potential mapping we do not anticipate a need for detailed karst inventories in the Bulkley TSA.

Range Ecosystem Inventory

The district has a number of established Permanent Habitat Monitoring Transects/Plots which are re-measured on a 3 year cyclical basis. On average, 10 plots within the Bulkley TSA are re-measured annually with the assistance of the Region. This is important baseline data that monitors/audits the impacts of range use and should be maintained. This is traditionally accomplished using a co-op student or similar Regional FTE allocation.

This inventory has been identified as having low – moderate importance in support of ongoing planning processes.

Range Cultural Inventory

Range cultural inventories (range improvements/structures) are maintained as a coverage within the Forest Cover (FIP) file. This inventory has historically been updated on a 3 year cyclical basis. The last update was completed in 1998. Because of the relatively small size of the range program within the Bulkley TSA and the data's program specific value, this inventory is viewed as being of low importance to other planning processes. This inventory will continue to be maintained and updated in-house as required.

Recreation

The recreation values within the Bulkley TSA are considered significant locally, provincially and internationally. Their associated inventories have been ranked as being of high importance as a business driver in support of strategic and operation planning initiatives.

Visual Landscape Inventory

The Bulkley TSA has satisfactory detailed Landscape Inventories in place, suitable for most, if not all of our planning activities. However, these inventories predate the current RIC standards and have not been digitized. The region suggests an opportunity exists here to upgrade the inventories to RIC standards but is not a high priority.

Recreation Opportunity

A Recreation Opportunity Spectrum Inventory for the Bulkley TSA has been recently completed to current standards. The current status of this inventory is considered to be good.

Recreation Features

The Recreation Features Inventory for the Bulkley TSA was recently completed to current standards and the status of this inventory is considered to be good.

Terrain Stability Mapping (TSM)

TSM is considered to be of Medium – High importance for both strategic and operational planning within the Bulkley TSA.

The SSFM component of the current RMP has identified ESA mapping, within the current Forest Cover Inventory, as inadequate to address slope stability issues. Detailed TSM (when and where available) is being used as a replacement for the existing ESA on our most sensitive landscapes.

Level E/D/C reconnaissance

Reconnaissance level 1:50,000 TSM has been completed for all critical areas within the Bulkley TSA. These inventories are presently considered to be satisfactory as overviews and provide direction for the identification of the more sensitive landscapes which require completion of detailed TSM.

Level C/B/A detailed

Detailed 'Level C' TSM has been progressively completed across the TSA on the most sensitive landscapes, as identified using Reconnaissance level inventories, and in accordance with an established multi-year plan with established funding under MYAs with FRBC. At the present time, the status of the detailed TSM across the Bulkley TSA is only considered satisfactory as all the critical areas have not yet been completed. Detailed TSM will continue on the remaining critical areas and should be completed by end of the 2001 – 2002 RMP project year.

TS Field Assessment

TS field assessments are completed by licencees as required, and are considered an ongoing operational requirement. They are considered to be of high importance at the operational planning level.

Traditional Use Study (TUS) Sites

A TUS has been completed for the Wet'sewet'en traditional territory which cover about two-thirds of the Bulkley TSA. The Gitxsan, Nat'oot'en (Lake Babine), and Tsimshian have no completed TUS, and we have not received any information on their traditional territories other than through our consultative processes. The district is continuing to work directly with the First Nations people to acquire a Landscape Unit level knowledge of their cultural activity, including areas/patterns of hunting, gathering and spiritual use.

The Wet'sewet'en TUS provides extremely valuable information, which is shared on a consultative base. Other first nations with traditional territories within the TSA have shown an interest in completing a TUS and the district strongly supports their efforts.

Vegetation Resources Inventory (VRI)

The Bulkley TSA was last re-inventoried in 1995, just prior to the operational implementation of the VRI. Therefore, it is viewed as a traditional Timber Inventory. As such it predates the current Land Classification Scheme and current INCOSADA standards. This inventory is commonly referred to as the Forest Cover and includes results of forest resource depletion and stand management activity on resource attributes.

A TSA re-inventory is done every 10-20 years. Before a new VRI or VRI retrofit can be done it will be necessary to develop a new VRI Plan for the Bulkley TSA portion of the district. This process replaces the previous Statistical Audit and

Pre-inventory Analysis process to determine provincial funding priorities based established need.

The last, and only statistical audit done on the Bulkley TSA (prior to completion of the 1995 re-inventory) showed that the Inventory was acceptable for use at the TSA level. In other words there was no significant difference between the means of the inventory-based estimates and attributed volumes and the ground-based measures of attributes and volumes. The Bulkley had one of the poorest correlations between inventory- and ground-based samples in the province.

Because Resource Inventory Branch no longer undertakes official Statistical Audits the district initiated a project to compare the original ground based samples to the 1995 re-inventory. This comparison suggests there may be a significant difference (eg. 10% overestimation) in the current inventory. However, it was necessary to re-stratify the samples based on changes in the polygonal delineation of the forest cover and the definition of operable vs. inoperable.

Representation based on (smaller) sample size has now become an issue, and makes interpretation of results more difficult. The exercise may point us to components of the inventory which should be looked at more closely, and which may have short-long term implications for strategic planning processes such as TSR.

The SSFM component of the RMP has identified the need for the district to get positioned for a VRI, which will require the acquisition of 1:30,000 scale aerial photography and digital products which support softcopy technology. Subsequent phases include - re-classification of non-treed polygons and photo-estimates of land attributes required by the current Land Classification Scheme and INCOSADA standard, ground (timber emphasis) based sampling, Statistical Adjustment (to remove any biases created during the photo interpretation phase), net volume adjustment factoring, and within polygon variation sampling.

The Forest Cover inventory is considered a base component of most, if not all our strategic-operational business drivers. A good inventory is of high importance to the district. A new VRI is very expensive and a phased approach to completing a new VRI will only be pursued if analysis of the existing inventory demonstrates that it is not of a sufficiently high standard, or the VRI is consider strategically important by the Region or Resource Inventory Branch.

Depletion Update

The Bulkley-Cassiar Forest District undertakes depletion updates in-house to pre-VRI standards. The district's objective for the Bulkley TSA is to ensure the Forest Cover depletions are captured on a two year cycle. In practice, the Bulkley TSA may updated for depletions on an annual basis.

Current imagery is critical to the success of the in-house update program, as it improves the spatial accuracy of the data capture, validates or checks accuracy of GPS data submissions, and reduces the time it takes to correct any discrepancies in data and to produce the final product.

An accurately updated Forest Cover Inventory is of high importance in support of district business drivers, particularly as we move towards detailed spatial modeling at the Landscape Unit level and utilize outputs as measures of resource sustainability and general performance.

Growth and Yield

Growth and Yield data collection and the information it provides is used to calibrate many of our analysis tools. Growth and yield projections are a component of our Forest Cover Inventory volume estimates. Growth and Yield (inputs/outputs) are a critical component of most stand modelling/decision making tools used to support strategic and operational planning initiatives undertaken in the Bulkley TSA.

Good measures of site productivity are considered of high importance to data analysis results, and subsequently affect many of our decision making processes.

There are a number of growth and yield related issues identified in the SSFM component of the RMP, such as the need to improve ecological based estimates of site productivity, under various management regimes, and at higher elevation zones for species such as Balsam. Opportunities to improve the knowledge gap specific to the Bulkley TSA include:

- re-measurement and interim reporting for the Blunt Creek Balsam Release Trial established in 1996,
- gathering of additional SIBEC data to improve the ecological representation across the TSA,
- SIBEC – PEM correlation exercise to support a spatial, ecologically based yield analysis, and
- producing localized SIBEC correlation, using existing data from Growth Intercept Sampling projects.

Predictive Ecosystem Mapping (PEM)

PEM methods are consistent with and complementary to traditional TEM procedures, while providing large-scale 1:20,000 ecosystem maps more quickly and cost effectively.

PEM is a computer model which utilizes various TRIM/inventory components to generate ecologically based landscape units, and makes site series predictions with a high or known degree of reliability. PEM is undergoing testing in the Telkwa Study Area within the Bulkley TSA and field checking of results is underway to verify outputs.

PEM has been identified as being of high importance in support of the district business drivers for strategic and operational planning initiatives.

The SSFM component of the district RMP has outlined a number of issues dependent on ecological based mapping. Issues include:

- identification and management of habitat requirements required to support First Nations traditional uses on the land,
- habitat supply interpretations required in support of wildlife and/or endangered species habitat identification and management,
- ecologically based spatial analysis of the impacts of current policy and practice on existing forest resources, including projections of future supply estimates,
- development of site productivity estimates in support of forest investment strategies and options, and
- assessment and monitoring of biodiversity components, and their impact on resource sustainability, certification and accountability reporting initiatives.

The district intends to proceed with the acquisition of PEM as soon as it can be demonstrated capable of providing acceptable outputs.

9.5 *FRI--Cassiar Component*

9.5.1 Information Table

See Table 2 in section 9.4.1.

9.5.2 District Assessment of Inventory Status Based on the Business Needs of the Management Area

Archaeological Overview Assessment (AOA)

In 1996 a detailed AOA was completed for the Cassiar TSA SBFEP Forest Development Plans in the Atlin, Dease – Liard, and Iskut areas. The Taltan AOA was also completed in 1999 in support of the Cassiar Iskut-Stikine LRMP process.

A good AOA has been generally identified as being of High/Moderate importance throughout a wide range of the strategic and operational planning business drivers.

AIS

An AIS has been identified as of Moderate – High importance in support of a wide range of strategic/operational planning business drivers.

The Prince Rupert Region supports AIS where it is used to support the calibration of an AOA.

A need for improved calibration for existing AOAs has been identified; however, no AIS work is planned in the Cassiar TSA at this time.

Forest Health Assessment

Forest Health Inventories are a vital component of forest management in the Cassiar TSA. They are therefore of high – moderate importance to the district business needs. Since the procedures are well established and risk management value of having a good inventory is recognized, it is believed that we can continue to operate at historic funding levels. Any decrease in historic funding would be viewed as a serious impediment to ongoing strategic and operational planning processes. (See Part 4: Forest Health Maintenance Component for more details.)

Pest Incidence Surveys

Pest Incidence Surveys can be considered a subset of Forest Health assessments. One cannot do a Forest Health assessment without doing a pest incidence survey. Pest incidence surveys are seen as having a Moderate priority as a business driver due to the linkages with Forest Health assessments. (See Part 4: Forest Health Maintenance Component for more details.)

Karst

There are few known karst features within the Cassiar TSA; however, this is a very large remote and generally unexplored area. These features have little to no impact on the district business drivers at this time and have not been ranked.

Reconnaissance

Reconnaissance Karst Mapping and Inventory for British Columbia testing the KISP Methodology has provided the district with 1:250,000 potential mapping for most of the Cassiar TSA. This reconnaissance level inventory suggests that the likelihood of finding new karst features is moderately high over large areas of the TSA.

The Karst Inventory is only considered 'draft' at this time as there are no established RIC standards in place. In addition, little effort was made to verify the data used by the modeling criteria nor field examinations to test the final outputs.

Planning

Based on our existing knowledge, reconnaissance level karst potential mapping, and low risk associated with limited resource development in the Cassiar TSA, we do not anticipate a need for detailed karst inventories at this time.

Range Ecosystem Inventory

There is no Range Ecosystem Inventory for the Cassiar TSA at this time.

The district has a number of established Permanent Habitat Monitoring Transects/Plots which are re-measured on a 5 year cyclical basis. On average, 10 plots within the Cassiar TSA are re-measured annually with the assistance of the Region. This is important baseline data that monitors/audits the impacts of range use and should be maintained. This is traditionally accomplished using a co-op student or similar Regional FTE allocation.

This inventory has been identified as having low – moderate importance in support of ongoing planning processes.

Range Cultural Inventory

Range cultural inventories (range improvements/structures) can be maintained as an coverage within the Forest Cover (FIP) file. At the present time, there are no plans to create a detailed cultural inventory. The range program within the Cassiar TSA is larger than in the Bulkley TSA, because of its much larger size. The Guide Outfitter industry is the primary client and it is generally not interested in having its structures mapped. The data has only limited program specific value, and this inventory is viewed as being of low importance to other planning processes.

Recreation

The recreation values within the Cassiar TSA are considered significant locally, provincially and internationally, and the opportunities they provide are one of the largest economic drivers in the Cassiar TSA.

Recreation inventories have been ranked as being of high importance as a business driver in support of strategic and operation planning initiatives.

Visual Landscape Inventory

The Cassiar TSA has satisfactory Visual Landscape Inventories in place for all of the primary travel corridors, suitable for most, if not all of our planning activities. However, these inventories predate the current RIC standards.

Recreation Opportunity

The Recreation Opportunity Spectrum (ROS) for the Cassiar TSA was last done in 1995. There is little demand to update this inventory in the short term as no significantly new access development is anticipated. A detailed Recreation Opportunity Spectrum Inventory was recently modelled for the Cassiar Iskut-Stikine LRMP. The current status of this inventory is considered to be good.

Recreation Features

A Recreation Features Inventory for the Cassiar TSA was completed in 1995. The status of this inventory is considered to be satisfactory.

The SSFM component of the RMP has identified the lack of a detailed Recreation Trails Inventory and associated Assess Management Plan as having an negative impact on ongoing planning processes. The district considers the completion of a detailed Recreation Trail Inventory and associated plans as a high priority in the short term.

Terrain Stability Mapping (TSM)

TSM is considered to be of Medium – High importance for both strategic and operational planning within the Cassiar TSA.

Level E/D/C reconnaissance

Reconnaissance level 1:50,000 TSM has been completed for all the SBFEP's operational areas (Bob Quinn/Devil Lake, Old Faddy/Blue River, and Atlin) within the Cassiar TSA. These inventories are presently considered to be satisfactory as overviews and provide direction for the identification of the more sensitive landscapes which require TS Field Assessments.

Level C/B/A detailed

Detailed 'Level C' TSM have not been completed for many areas within the Cassiar TSA, except where required as an information requirement in support of new mining proposals. Detailed TSM is not considered to be an important requirement in the short term considering the current rate of resource extraction.

TS Field Assessment

TS field assessments will be completed by licencees when required, and are considered an ongoing operational requirement. They are considered to be of high importance at the operational planning level.

Traditional Use Study (TUS) Sites

TUSs have been completed for the Kaska Dena and the Taltan traditional territories which cover about 75% of the Cassiar TSA. The Alsac Champain have no completed TUS, and we have not received any information on their traditional territories other than through our consultative processes. It is not known at this time if the Alsac Champain have any plans for completing a TUS.

Vegetation Resources Inventory (VRI)

The Forest Cover inventory is considered a base component of most, if not all our strategic-operational business drivers. A good inventory is of high importance to the district.

The Cassiar TSA has a traditional Timber Inventory. As such it predates the current Land Classification Scheme and current INCOSADA standards. This inventory is commonly referred to as the Forest Cover and includes results of forest resource depletion and stand management activity on resource attributes.

The Cassiar TSA was last re-inventoried in 1970 as part of the second complete inventory project for the province. Inventory activities from 1991-1993 included a DSD/NSR Realignment and a Depletion Update to address localized impacts of historic/recent wildfire activity. In 1999, the Cassiar Forest Cover inventory was shifted from NAD27 to the new NAD83 TRIM base. A small number of mapsheets in the Iskut-Bob Quinn area were updated in 2000 to capture results of timber harvesting activity and field surveys.

A statistical audit for the Cassiar TSA was completed in 1997. It stratified the TSA into 2 areas Dease Lake North (the Dease-Liard and Atlin Supply Blocks) and Dease Lake South (Iskut and Boundary Supply Blocks). The statistical audit showed that the Inventory in the Dease Lake South component was of an acceptable standard. In other words, there was no significant difference between the means of the inventory-based estimates and attributed volumes and the ground-based measures of attributes and volumes. A significant difference was found however in the Dease Lake North. The Inventory in the Dease Lake North component was shown to be overestimating stand height by 17%, and associated volumes by 30%.

The results of the statistical audit and issues documented in the Chief Forester's TSR determination for the Cassiar TSA suggested that a Re-inventory was in order. A new VRI Plan for the Cassiar TSA was completed in early 2000. This plan is used to establish provincial funding priorities based established need.

The SSFM component of the RMP has identified the weakness of Forest Cover Inventory estimates as our issue of highest concern. Lack of a rigorous inventory makes it difficult to analyse impacts of decision making processes.

There are a number of conditions that can be viewed as constraining the acquisition of a VRI.

- The Cassiar TSA has a very large land base and a new VRI is estimated to cost 6 million dollars.
- Operable portion of the Cassiar is a small proportion of the total landbase.
- Demand for timber resources is low or non-existent, except in support of local demand.
- Only a portion of the AAC has been allocated, principally in the southern Iskut-Boundary Supply Blocks. The SBFEP manages this allocation.
- Lack of a current aerial photo coverage to the required standard.

In these circumstances, we believe it would be difficult to get such a large allocation. The cost of providing resources to support inventories on such a large landbase should be borne by all agencies benefiting from its acquisition.

The regional PRIC (with joint membership of MoF and MELP inventory experts) supported an integrated approach to acquire resources (aerial photography, digital products) and base inventories (TSM, TEM, VRI, etc.).

One of the initial phases would be the acquisition of 1:30,000 scale aerial photography and digital to support softcopy technology, and a test of an integrated approach to acquiring base inventories. This is an ongoing project and is receiving some MoF vote and FRBC funding support (1999-2000, 2000-2001) but not enough progress is being made to resolve short term inventory issues. Unless the VRI is consider strategically important to the province progress will continue to be slow.

Depletion Update

The Bulkley-Cassiar Forest District undertakes depletion updates in-house to pre-VRI standards. The district's objective for the Cassiar TSA is to ensure that harvest depletions are captured at minimum on a three year cycle. In practice, the Cassiar TSA has been historically updated for depletions such as fire activity and the results of management surveys at intervals of greater than five years. Lack of current imagery or aerial photos, large size of area, and lack of any substantive harvesting activity makes the Cassiar a lower priority for resource allocation.

Growth and Yield

Growth and Yield data collection and the information it provides is used to calibrate many of our analysis tools. Growth and yield projections are a component of our Forest Cover Inventory volume estimates. Growth and Yield (inputs/outputs) are a critical component of most stand modelling/decision making tools used to support strategic and operational planning initiatives undertaken in the Cassiar TSA.

Good measures of site productivity are considered of high importance to data analysis results, and subsequently affect many of our decision making processes.

Predictive Ecosystem Mapping (PEM)

PEM methods are consistent with and complementary to traditional TEM procedures, while providing large-scale 1:20,000 ecosystem maps more quickly and cost effectively.

PEM is a computer model which utilizes various TRIM/inventory components to generate ecologically based landscape units, and makes site series predictions with a high or known degree of reliability.

PEM has been identified as being of high importance in support of the district business drivers for strategic and operational planning initiatives.

The district will look into the possibility of acquiring PEM for the Cassiar for areas where testing has shown outputs to be of an acceptable standard.

9.6 *FRI--Kispiox Forest District*

9.6.1 Information Table

Table 9.1.1: Inventory Status and Need by Business Driver

Region: **Prince Rupert** District: **Kispiox**

Business Driver

Inventory	Type (Intensity)	Status	International			National			Strategic				Reg/Sub-Reg			Local							Operational Planning Regs					
			Conventio n on	Kyoto Protocol	Criteria + Indicators	National Forest	Canadian Biodiversit	National Forest	Land Use Charter	Protected Areas	First Nations	Identified Wildlife	Regional Land Use	LRMP	Timber Supply	Resource Managem	Landscape Units	Watershed Assessme	Riparian Assessme	Sensitive Areas	Recreation Features	Ungulate Winter	Forest Developm	Silviculture Prescriptio	Range Use Plans	Stand Managem	Road Design	Harvesting Regulation
Archaeology	AOA	A			M	M				L	H		L	L	L	L							H	H				
	AIS	as needed																					H	H				
Forest Health	forest health assessment	n/d			L	L								L	H	L							H			H		
	pest incidence surveys																											
	Plantation Pest	n/d												L	H	L							M	H		H		
	Beetles (other than IBB)	n/d			H	H								L	M	L							M	H		H		
	Tomentosus	in progress			H	H								L	H	L	H						H	H		H		
	Balsam Bark Beetle	in progress			H	H								L	H	L	H						H	H		H		
Karst	reconnaissance	n/a																										
	planning	n/a																										
Range	range ecosystem inventory	n/d			L	L							L	L	L		L						L		H			
	range cultural inventory	n/d									L												L		M			
Recreation	visual landscape inventory	A			H					L			L	H	H	H	H			H	H		H	H			H	H
	recreation opportunity	A			H					L	L		L	H	L	M	M			L	H							
	recreation features	A			H					L	L		L	H	L	M	M			L	H							
	rec. feature - Yukon Telegraph Trail	n/d			H					L	L		L	H	H	L	H			L	H		H	H			H	H
Terrain (Stability) Mapping (including Soils)	Level E/D/C reconnaissance - Update existing reconnaissance TSM based on recently completed assessments	B			H	H				L	L			L	H	L		H		M			H					
	Level C/B/A - detailed	B			H	H				L				L	H	L		H		M			H					
	TS Field Assessment	as needed																H						H		H	H	H
Traditional Use	TU sites	n/d			M	M				M	H		L	L	L	L							L					
Veg. Resources Inventory	depletion update - imagery (e.g satellite imagery, photography, orthophotography) and Global Positioning System (GPS) data are periodically needed to conduct forest depletion update	A		H	H	H		H		H	H		H	H	H	H	H					H	H		H	H		
	New Aerial Photos	C						H		L	L	H	H	H	H	L	H	H				H	H	H	L	H	L	L
(VRI)	retrofit to VRI standards	n/d																										
	new photo estimation	n/d																										
	ground sampling (timber)	n/d																										
	ground sampling (full VRI)	n/d																										
Growth and Yield	productivity assessment - Site index estimation/adjustment for single and mixed species	n/d			H	H									H											H		
	growth model - PSP re-measurement, OAF adjustment for Cranberry TSA	B, n/d			H	H									H											H		
Ecoregion Mapping	ecoregion interpretations	A	H	L	H	H	H					H		H			H											
Broad Ecosystem Inv.	BEI	in progress	H		H	H	H		L	L	L	H		H	L		H											
Pred. Ecosys. Mapping*	PEM - Level 2 (detailed)	n/d	H		H	H	H		L	L		H	L	H	L		H			H		H	H					
Terr. Ecosys. Mapping*	TEM - Level R (overview)	n/d																										

Table 9.1.1: Inventory Status and Need by Business Driver

Region: **Prince Rupert** District: **Kisplox**

Inventory	Type (Intensity)	Status	Business Driver																									
			International			National			Strategic				Reg/Sub-Reg			Local							Operational Planning Regs					
			Conventio n on	Kyoto Protocol	Criteria + Indicators	National Forest	Canadian Biodiversit	National Forest	Land Use Charter	Protected Areas	First Nations	Identified Wildlife	Regional Land Use	LRMP	Timber Supply	Resource Managem	Landscape Units	Watershed Assessme	Riparian Assessme	Sensitive Areas	Recreation Features	Ungulate Winter	Forest Developm	Silviculture Prescriptio	Range Use Plans	Stand Managem	Road Design	Harvesting Regulation
Rare Ecosystem Inv.	TEM - Level 5 (reconnaissance)	n/d																										
	TEM - Level 4 (intensive)	n/d																										
	REI	n/d												H			H			H			H	H				
BCF: Fish/Fish Habitat	summary (FISS)	B	L		L	L	L		L	L	L	L		M	L		L		L	L			M					
	overview (1:50 000)	n/a																										
	reconnaissance (1:20,000)	in progress	L		L		L					L		H	H		H	H	H	H			H	H	L	L	H	H
	intensive (1:5,000)	as needed					L					L						H	H	H			L	H			H	H
	species / population inv. - Bull Trout	n/d	H		H	H	H			L		H	H	H			H			L			H					
	lake classification	A												H	M		H	L	H				H	H				
Water Quality/Quantity	water quantity inventory - stream gauging	n/d	L		H	M	L		L				L	L		L	L						L	M			H	H
	water use inventory (comm. w/s)	A											H	H	H	L	H	H					H	H			M	M
	water quality inventory - Index of biological integrity	in progress			H	H							L	H	L	L	H	H					M		M			
Wildlife/Wildlife Habitat	BEI interpretations	in progress	H		H	H	H		L	L	L	H		H	L		H											
	TEM/PEM interpretations	n/d	H		H	H	H		L	L		H	L	H	L		H			H		H	H					
	species presence and abundance																											
	Habitat Suitability Model	in progress	L		L	M	M					H	M	H	H		H					H	H	H				
	Habitat Supply Model	n/d	L		L	M	M					H	M	H	H		H					H	H	H		H		
	Goat Telemetry	n/d	L		H	M	M					H	M	H	M		H					H	H	H		M		
	Northern Goshawk	in progress	L		H	M	M					H		H	M		H						H	H				
	rare & endangered spp	n/d	H		H	H	H	H	L	H	L	H	H	H	H	H	H		L	M		H	H	H	L	H		
Botanical Forest Products	Pine Mushroom Suitability Mapping	n/d			L						H		L	M	H	L	H						H	H				

*Terrestrial Ecosystem Mapping has an alternative, Predictive Ecosystem Mapping (PEM)
with a lower level of intensity of ground truthing. All have RIC standards

Legend:

A = Good status

B = Satisfactory status

C = Poor Status

n/d = not done
n/a = not applicable

H = Inventory is of high improtance to the Business Driver
M = Inventory is of moderate importance to the Business Driver
L = Inventory is of low importance to the Business Driver

▨	Explicitly required by legislation / regulation
☐	Implicitly required by legislation / regulation (interpretation involved)
▨	Needed to set management objectives or for resource management
☐	All or portion of inventory required for planning process
☐	Information not currently required

9.6.2 District Assessment of Inventory Status Based on the Business Needs of the Management Area

Archaeological Overview Assessment (AOA)

An AOA mapping project was completed in January 1999. The AOA was developed with a Geographic Information System (GIS) model based on cultural, ecological, geographical, and geological data. Since its completion, the AOA has been used for consultation with First Nations and to identify areas where Archaeological Impact Assessments (AIA) are needed.

However, about 30% of the Kispiox Forest District area is classified as having a high or moderate-high archaeological potential in the AOA. As AIA are costly and cause delays in operational plan approvals and associated Standing Timber Inventory (STI), they can not be expected to be conducted in all areas assessed as having high or moderate-high archaeological potential in the AOA. In order to provide informed and cost effective operational archaeological management procedures to licensees, the district has developed an Archaeology Management Strategy District Operating Procedure and a risk assessment matrix to determine the requirement for further archaeology studies.

Many of these studies have been conducted in the recent past along with preliminary field reconnaissance and local field reconnaissance surveys. In addition, cultural heritage features are often found before or during harvesting activities. The result of these assessments/studies provide a better understanding of the archaeological history of the district and new information that could be used to refine the existing AOA model based on field verification. A refined AOA would improve the review of Forest Development Plans (FDP) and would improve the decision making process when determining whether an AIA is needed. It would also greatly reduced the risk associated with the use of the actual risk assessment matrix.

The district considers the need for an AOA model refinement as a low priority for the 2001-2004 period.

Archaeological Impact Assessments (AIA)

AIAs are required in situations where the district manager feels that the assessment is necessary in order to adequately manage and conserve archaeological sites in an area where harvesting and road building is planned. The assessment must be conducted prior to the plan's approval. The need to carry AIA in SBFEP chart areas is considered to be a high priority.

Forest Health Assessment

Formal Forest Health Assessments have not been conducted in the Kispiox Forest District. However, the presence of health threats such as Balsam bark beetle, spruce weevil, tomentosus, spruce beetle, and needle cast has long been known.

Pest Incidence Surveys

Aerial overview flights conducted in recent years have shown an increase in both the spatial distribution and the extent of mortality caused by the western balsam bark beetle. This pest is normally endemic in the district and trees die sporadically throughout a stand resulting in a varied 'salt and pepper' pattern. However, the results of the aerial surveys show a high number of groups of dead trees, banded strata and in some instances, as areas of complete kill of 10 – 20 hectares or more.

Losses due the western balsam bark beetle may have significant impacts on timber supply. A survey to estimate the incidence of the pest was undertaken in 1999 in a small portion of the district. However, the full extent of the damage (spatially and temporally) in the Kispiox Forest District must be known. To this effect, funding has been secured for an additional contract to expand knowledge on the extent of the infestation during the 2000 field season. This is considered a high priority by both the district and the Prince Rupert Forest Region (PRFR).

Other beetles, such as the spruce beetle, remain endemic. However, there is evidence that the beetle is moving in from the Bulkley Forest District where it is of significant concern. The situation will have to be closely monitored in the next few years, and extensive surveys might be necessary if the incidence of the pest increase significantly.

Tomentosus root disease has been gathering more attention as to its extent and impacts on the spruce component of mature unmanaged forests. Timber supply impacts have been quantified in neighbouring districts and have been found to be significant. It is suspected that losses due to the disease are at least as important in the Kispiox. Funding has been secured for the 2000/2001 fiscal year to investigate and determine expected losses due to the disease in mature and unmanaged stands, and in regenerating stands. This inventory is considered a high priority by both the district and the PRFR.

Work is currently underway to investigate the extent and impact of a foliar disease prevalent in young pine leading stands. The suspected agent is Red Band Needle Blight (*Dothistroma*) and has potential to cause high mortality and plantation failure. This is also considered high priority. Other juvenile stand pests and diseases such as spruce weevil infestation are common in plantations. These are considered endemic but abnormal infestation can cause mortality resulting in setbacks in plantation development. The presence of these pests is monitored periodically as part of the licensees' silviculture requirements. Additional surveys are considered a low priority for the time being.

Karst

According to "*Reconnaissance Karst Potential Mapping and Inventory for British Columbia: Testing of the KISP Methodology*", the karst potential within the Kispiox Forest District is very low, and the information currently available supports this preliminary reconnaissance mapping.

Range Ecosystem Inventory

The physical and biological status of range resources has not yet been determined for the Kispiox and Cranberry TSA. A range ecosystem inventory would help ensuring that range resources are effectively protected and conserved. Such an inventory is considered a low priority for the district.

The presence of noxious weeds in the area is raising concerns. The extent of noxious weeds invasion needs to be assessed through a noxious weed survey. This is considered a low priority for the district for the time being.

Range Cultural Inventory

Use of range resources on Crown land in the Kispiox and Cranberry TSAs is low. A cultural inventory is not considered important at this time.

Visual Landscape Inventory

A Visual Landscape Inventory was completed in 1999 for the Kispiox Forest District.

Recreation Opportunity and Recreation Features

The Recreation Opportunity and Features inventory was updated to new provincial standard in 1999/2000.

The Yukon Telegraph Trail is being designed as a heritage trail under the *British Columbia Heritage Act* and a management plan has been prepared and approved for the trail. However, as the exact location of the trail is unknown the plan cannot be fully implemented. Locating and mapping the Yukon Telegraph Trail is considered a high priority inventory for the Kispiox Forest District.

Level E/D/C - Reconnaissance

In the PRFR, reconnaissance level TSM projects are considered to be strategic. In the Kispiox TSA, terrain stability intensity level (TISL) C should be the primary level of mapping due to the amount of steep terrain.

A contractor was hired in the summer of 1998 to gather all the terrain stability information currently available for the Kispiox TSA. Where necessary, TSM data was digitized from hard copy maps or translated into one common geographic information system (GIS) format. After conducting office and field assessments, new line work was added for those areas within the operability lines where TSM had not yet been completed. Only sensitive soil units (i.e. stability classes IV or V from detailed mapping projects and classes P and U from reconnaissance projects) were considered. All terrain stability interpretations were converted to current standards for TSM (e.g. classes P and U were re-classified as classes IV and V).

Some areas were not included in the 1998 TSM project as terrain stability mapping had not been completed or was in the process of being completed for these areas. Since then, TSM was completed for most of these areas and the results should be incorporated in the strategic TSM coverage. This is considered a medium priority for the district.

Level C/B/A - Detailed

The majority of terrain stability assessments in the Kispiox Forest District were completed at level C. Most areas currently under forest development have been assessed for terrain stability except for the Cranberry TSA and a small portions of the Kispiox TSA.

Terrain Stability Field Assessment

Field stability assessments are conducted to prescribe site-specific actions needed to minimize the likelihood of landslides in a given area. Prior to approval of cutting permits or road construction, assessments must be conducted in all areas with a moderate or high likelihood of landslide initiation following harvesting or road building. The need to carry Terrain Stability Field Assessment in SBFEP chart areas is considered to be a high priority.

Traditional Use Sites

A Traditional Use Study (TUS) was completed by the Gitanyow First Nations for a portion of the Kispiox Forest District (Cranberry TSA and portions of Kispiox TSA). Other First Nations (Gitxsan) have expressed the desire of conducting TUS in their claimed areas. Although TUS completion is one of the MoF target for its First Nations Forest Strategy key initiative for 2000/01, the need for TUS inventories is considered low for most business drivers in the Kispiox Forest District.

Depletion Update

The forest cover inventory is updated to August 1997 for depletions (roads and cutblocks). An update project is currently underway to update the inventory to August 1999 for about 60% of the active areas and to assess the spatial accuracy of blocks and roads along the Cranberry River.

The depletion update strategy in the PRFR and in the Kispiox Forest District relies heavily on the purchase and use of satellite imagery on a two-year cycle. Digital Exchange Agreements (DEA) and Global Positioning System (GPS) data supplements the imagery in the update process.

Recent satellite imagery (August 1999) is available for about 60% of the district area with active logging and road building activities. Digital Exchange Agreements are in place with four licensees. Some of these DEAs require a review and there are still unresolved data integration issues with most. The GPS unit purchased by the PRFR in 1999 is used extensively for update and operational purposes in this district. However, conflicting schedule uses with neighbouring offices occur frequently. These scheduling conflicts create delays and problems in gathering the information.

In order to complete the update of the forest cover inventory, new satellite imagery is needed to cover the remaining area of the district not covered with 1999 imagery. If available, the new imagery should be purchased and georeferenced by the end of 2000 (2001 at the latest) and again in 2001 and 2003. The acquisition of a second GPS receiver would eliminate most problems associated with the scheduling conflicts and would facilitate the co-ordination and integration of field data.

The acquisition of new satellite imagery is considered a high priority for the district and most business drivers. The acquisition of a new GPS receiver is considered to be a medium to low priority for the time being.

Aerial Photos

The most recent aerial air photos were taken in 1992. These photos were used as the basis for the Kispiox TSA re-inventory. New photos were expected to be taken during the summer of 1997 through the block photography program. However, due to bad weather only three flight lines were taken and a large portion of the area covered by these flight lines is now within a provincial park.

The lack of recent large scale air photos is seriously hampering many strategic and operational planning initiatives such as the landscape unit planning process, the determination of changes in species composition and stand structure, silviculture surveys, and update. The need for new black and white photos at a scale of approximately 1:15,000 is recognized by the licensees, the MELP and by the MoF and is considered to be a very high priority.

Vegetation Resource Inventory

As described in the 1998 and 1999 PRFR resource inventory management plans, a Vegetation Resource Inventory (VRI) plan should be completed prior to conducting any (VRI) activities. The need for a VRI plan is considered to be a low priority for the Kispiox Forest District for the time being, and without that plan, it is very difficult to assess the importance of VRI component to the business drivers listed in Table 9.9.2.

Growth and Yield

G&Y provide information on how the quantity, quality and composition of forest change over time. The future composition of the forest in-turn affects many strategic decisions regarding management of the land base including: biodiversity, old growth, wildlife habitat, harvesting volumes and values, green-up, visual aesthetics, etc. Most G&Y data is obtained through field sampling and this information is then used for calibrations to computer models and analysis tools. Failure to maintain existing data such as Permanent Sample Plots (PSPs) and to improve or localize other data such as Operational Adjustment Factors (OAFs) can have significant impacts on TSR decisions and implementation of LRMP decisions.

The need for accurate growth and yield information is of high importance for most business drivers identified in Table 9.9.2. The regional specialist will determine the need for and type of specific inventory projects for productivity assessment and growth model.

Ecoregion

An ecoregion is an area with major physiographic and minor macroclimatic or oceanographic variation. Of the 43 ecoregions classified in British Columbia, about 3 occur within the Kispiox Forest District. Ecoregions are an integral part of the hierarchy used for Broad Ecosystem Inventory classification and mapping. They consist in the broadest unit that determine the function and distribution of plant communities at the landscape level. Ecoregion classification and mapping is of high importance for LRMP and LUP strategic planning processes.

Broad Ecosystem

A Broad Ecosystem Inventory for the Kispiox Forest District is currently being finalized. This inventory will be used in the upcoming LUP process.

Predictive Ecosystem

Due to its much lower cost Predictive Ecosystem Mapping (PEM) is currently preferred to Terrestrial Ecosystem Mapping (TEM). PEM is a computer model derived through a knowledge-based methodology that classify areas based on their potential to produced similar plant communities when in a late successional stage. These sites have similar soil moisture, soil nutrients, texture and aspect. The resulting ecosystem classification is used for landscape unit planning, forest development planning, and wildlife management strategies. It would also complete the SBFEP adaptive management process in a significant way.

The completion of PEM is considered a high priority in the region and district.

Terrestrial Ecosystem

Terrestrial Ecosystem Mapping provides detailed field derived information on site series. Given the high costs associated with TEM, PEM is the preferred method for obtaining information on site series.

Rare Ecosystem

One of the objectives of the Kispiox LRMP is to maintain rare ecosystems and plant communities. A rare ecosystem District Operating Procedure (DOP) has been developed to help meet the objective. However, these ecosystems should be inventoried to provide broad strategic directions. The need for such an inventory is of medium importance for the 2001-2004 period.

Fish and Fish Habitat--Summary (FISS)

FISS is a joint MELP and Federal Department of Fisheries and Oceans venture. The FISS project is now done and covers a large portion of the district.

Overview (1:50,000)

Due to their small scale, 1:50,000 overview inventories are not used in the Kispiox Forest District.

Reconnaissance (1:20,000)

Reconnaissance fish inventories at a 1:20,000 scale have been identified as having high importance to meet many business drivers. Work has been conducted over the last few years to identify fish-bearing streams and fish habitat on a watershed basis. The knowledge that will be gained with these inventories will be used to develop and implement landscape level objectives and operational guidelines for the protection and conservation of riparian habitat. These will lead to improvements in meeting LRMP riparian area objectives and strategies, in the conservation of fish and fish habitat values, and in meeting the SFM biodiversity and soil and water criteria.

Intensive (1:5,000)

The information collected with the reconnaissance level inventories, together with information collected during pre-harvest field surveys, will be used to derive stream classification values and identify riparian reserve and management zones. These intensive inventories are of high importance for operational purposes.

Species/Population Inventory

Bull trout is a blue listed fish species that is of high concern for MELP. There is a risk that the lack of knowledge on bull trout habitat requirements and habitat location might lead to a decline in population numbers. Bull trout inventories have been identified as a critical inventories for the main watersheds of the Kispiox District. However, due to their high costs and other critical priorities, they are considered to be a medium priority.

Lake Classification

A lake classification inventory was completed in 1996 and converted to new digital standards in the summer of 2000.

Water Quantity Inventory

Gauging stations were installed and measured by Water Survey of Canada in the mid-1990's to study peak flow data for small streams. The information is needed to design drainage structure that limit erosion, maintain fish passage and allow for water and bed load passage. This was identified as a critical project in previous RMPs, but due to a lack of funding, the project has been abandoned.

Water Use Inventory

Community watersheds have been identified during the LRMP process and information on water users and licensed use is available.

Water Quality Inventory

An inventory of natural sediment delivery sources was completed in 1999 for the Kispiox River watershed. This watershed is of particular concern for members of the public. A Watershed Assessment was also completed for this watershed and the Kitseguecla watershed. There is now a need to complete a mapping project for unnatural sediment delivery sources in the Kispiox Watershed. This project is considered to be a moderate priority.

An inventory project aimed at developing a water index of biologic integrity conditions using benthic invertebrates was undertaken by SBFEP in 1999/2000. The index now needs to be calibrated and its calibration is considered to be a high priority for the district. Once the index is calibrated, it will be implemented and will be used to monitor water quality in the district and potentially in the region.

BEI Interpretations

Broad Ecosystem Inventory interpretations are done as part of the BEI classification project currently underway.

TEM/PEM Interpretations

TEM/PEM interpretations will be done as part of the PEM project.

Species Presence, Relative Abundance, and Absolute Abundance

For the Kispiox Forest District, it has been agreed between MoF, MELP, and licensees to assess wildlife habitat at the landscape level prior to determining species presence and abundance. A wildlife habitat suitability model for goat, moose, deer, and grizzly bear has been developed in 1999 and refined in 2000. Field verification of the model is currently underway. A habitat suitability model needs to be developed for marten and fisher. Completing these models, with field verification, is a high priority for the district. The development of a habitat supply model to assess the impact of timber harvesting activities on wildlife populations is another project considered as a high priority.

At the stand level, a nest inventory with quantification of response to timber development project for the northern goshawk has been underway for the past few years. This project is also considered as a high priority and will take about three years to complete. The goshawk inventory project has lead to the development of a goshawk adaptive management plan that now requires monitoring and evaluation.

Finally, a goat telemetry study to understand goat population movement and habitat use has been identified as a medium priority inventory project.

Rare and Endangered Species

Inventory needs for rare and endangered wildlife species have not yet been identified for the Kispiox Forest District.

Botanical Forest Products

The harvest of botanical forest products, particularly pine mushrooms, is a very lucrative activity in the area. However, little is known about the resource and this lack of knowledge is hampering the implementation of key LRMP objectives and creates conflict with other resource uses. One way to gain understanding on pine mushroom ecology would be through the completion of a suitability mapping project. This is considered as a high priority for the district.

9.7 *FRI--Kalum Forest District*

9.7.1 Information Table

See Kalum Forest District section in SSFM component.

9.7.2 District Assessment of Inventory Status Based on the Business Needs of the Management Area

See Kalum Forest District section in SSFM component.

9.8 *FRI--North Coast Forest District*

9.8.1 Information Table

Table 2: Inventory Status and Need by Business Driver

Region: **Prince Rupert**; District: **North Coast**

			Business Driver																									
			International			National			Strategic				Reg/Sub-Reg			Local							Operational Planning Regulations					
Inventory	**Type (Intensity)**	**Status**	Convention on Biological Diversity	Kyoto Protocol	Criteria + Indicators	National Forest Strategy	Canadian Biodiversity Strategy	National Forest Inventory	Land Use Charter (CORE)	Protected Areas Strategy Process	First Nations Treaty Negotiations	Identified Wildlife Management Strategy	Regional Land Use Planning	LRMP	Timber Supply Review on TSA's	Resource Management Zones	Landscape Units	Watershed Assessments	Riparian Assessments	Sensitive Areas	Recreation Features, Sites	Ungulate Winter Ranges	Forest Development Plans	Silviculture Prescriptions	Range Use Plans	Stand Management Prescriptions	Road Design Regulations	Harvesting Regulations
HyP3	Field Assessments	A						M							H								H					
	Operational Trials							M							H								H					
PEM	Data Collection and Calibration	A						M							H									H		H		
	Auditing and Control							M							H									H		H		
SIBEC - Stage 2	Field Reconnaisance	A						M						H										H				H
	Quality Control							M						H										H				H
Riparian Classification	species / population inv	C													H	H			H							H		H
	Stream/Lake classification														H	H			H							H		H
Visual Landscape Inventory	visual landscape inventory	A													H						H			H				
	recreation opportunity														H						H			H				
	recreation features														H						H			H				
AOA - TUS	TUS Sites Assessments	B									H			H									H					H
	AOA - TUS Integration										H			H									H					H
Ecological Operability Modeling	PEM related	C													H													
Growth and Yield	productivity assessment	B												H														
	growth model													H														
Inventory Updates		B													H													

*Terrestrial Ecosystem Mapping has an alternative, Predictive Ecosystem Mapping (PEM) with a lower level of intensity of ground truthing. All have RIC standards

Legend:

A = Good status

B = Satisfactory status

C = Poor Status

n/d = not done

n/a = not applicable

H = Inventory is of high improtance to the Business Driver

M = Inventory is of moderate importance to the Business Driver

L = Inventory is of low importance to the Business Driver

▨	Explicitly required by legislation / regulation
☐	Implicitly required by legislation / regulation (interpretation involved)
▨	Needed to set management objectives or for resource management
▨	All or portion of inventory required for planning process
☐	Information not currently required

9.8.2 District Assessment of Inventory Status Based on the Business Needs of the Management Area

Objectives – Business Plan:
"To provide the availability of operational inventories and their associated data bases as needed for the upcoming North Coast Local Resource Management Plan (LRMP). As the Kalum LRMP and the Cassiar Iskut-Stikine LRMP are coming to a close, the Prince Rupert Inter-Agency Management Committee has identified the DNC as a prime target for starting an LRMP. In order to meet the large deficit of operational inventories, the strategies identified below must be completed to meet the needs of all North Coast Forest District business needs."

This Plan provides consistent and standardized inventories to all interest groups involved with Natural Resource Management and LRMP initiates. Management Issues have been coordinated with business drivers in such a manner that schedules to complete these inventories over the next 3 years will substantially aid the both the District and Regional Resource Management Plan.

Predictive Ecosystem Mapping PEM Calibration
Two (2) study areas on the North Coast (Diana Lake and Grenville Channel) have been classified and are currently being refined based on field verification. This is critical for the application of ecosystem management objectives derived from the HyP3 operational trials. The information collected will be used for the calibration of Predictive Ecosystem Mapping (PEM) for the entire North Coast TSA. The one-year project will begin in 2001 and will cost about $92,950.

HyP3 Project Scope
Year 3 of the operational trial HyP3 conducted on the North Coast has allowed for intense research in the areas of site preparations based on ecosystem strategies, wood quality analysis and specialized harvesting practices of poor productivity Cedar-Hemlock sites. Year 4 will continue to focus on the reforestation on the harvested trial areas and end recovery of the wood harvested from the research trials. Micro-site reforestation and monitoring of the results will determine the potential success and or failure of the experimental research trial. The estimated cost for year 4 is $43,575

Site Index Analysis and Interpretation – SIBEC Stage 2
Gross errors have been identified on our inventory maps on site index estimates within the operable land-base. Intense sample data collection has been completed for the CWH vm and CWH vh subzone variants. As part of the partition cut assigned to the most northern portion (CWH wm) of the TSA, site index analysis must now be completed for the area so that the upcoming TSR III can use site index attributes compatible with the rest of the TSA. The field data collection is scheduled to begin in May of 2001 and submitted for analysis and data-package preparation in August of 2001.

Three staff in our region will be conducting the auditing in order to meet the required deadlines. The project is estimated to cost $41,210.

Traditional Use Study (TUS) to Archaeological Overview Assessment (AOA) Integration Analysis

The existing AOA is now ready for complete integration of the TUS information collected by the various bands within our TSA. We have coordinated a schedule which will allow for all TUS information to be integrated into the existing AOA over the next 3 years. The funds will be allocated to the bands themselves so that they may integrate the information in a manner which will suit their needs as well as ours.

- Estimated cost for the first year is $74,700 in 2001.
- Estimated cost for the second year is $64,800 in 2002.
- Estimated cost for the third year is 82,300 in 2003.

Fish Stream Classification Inventory

Several important legal requirements to Riparian Management Areas (RMAs) and wildlife corridors are currently not being met at the strategic planning level. Individual attempts have been made by several government agencies to classify, predict and map this inventory. We are prepared to co-ordinate and manage the joint effort in collecting and further classifying the contentious drainages on the North Coast. The estimated cost over 2 years starting in 2001 is $98,500.

Timber Harvesting Land Base (THLB) mapping

The upcoming LRMP table will be using numerous overlays which will continuously be referring to the existing THLB derived from Timber Supply net-downs used in TSR II. This product should be considered a key part of the North Coast LRMP. The estimated cost starting in 2001 is $9,500.

Visual Landscape Inventory

In order to meet legislative requirements on visual quality, we need to complete the inventories over the scenic corridors, which are highly sensitive to forest practices. Only the northern portion of the TSA remains to be classified and mapped. Branch personnel have agreed to aid in the completion of this highly needed project in order to keep cost to a minimum. The estimated cost in 2001 is $7,600.

Ecological Operability Modeling

Our current operability mapping has been criticized by many due to its inability to reflect areas outside the existing operable landbase such as the low productivity sites identified through HyP3. The methodology and approach has been completed so that work can begin as soon as the PEM has been completed. The estimated cost $23,200 and the project is expected to begin in 2002.

Provide current aerial photography on a seven year cycle

In order to meet basic inventory data collection for various objectives mentioned in this RMP, the District needs to replace existing 1992 photographs with updated low level 1:15,000 colour photography is for the entire district over a 2 year period beginning in 2002. Photos will be used for detailed resource inventories such as PEM, TEM, AOA, TSM, 5YRDP Planning, BEC, Trespass and Audits. Estimated cost for entire district is $220,000. TRIM II cost-sharing proposal with licensees will be reviewed in 2002.

Strategies for all Inventories:

This Plan provides consistent and standardized inventories to all interests groups involved with Natural Resource Management and LRMP initiates. Management Issues have been coordinated with business drivers in such a manner that schedules to completed these Inventories over the next 3 years will substantially aid the Regional RMP.

10.0 RECREATION SITE & TRAIL MAINTENANCE

10.1 Region Recreation Site & Trail Maintenance Issues and Priorities

The single major issue facing the recreation site and trail program is a lack of funding. With even the current minimal levels of funding now threatened, the program is facing the prospect of closing sites and deactivating trails to reduce safety risks associated with poorly maintained structures. The expected increase in outdoor tourism, due to a retiring "baby boomer" population along with ever increasing road access, will result in more demand for forest based recreation use. Recreation sites and trails, even if deactivated, will continue to be used by a recreating public and subsequently become unsafe and unsanitary unless a properly funded maintenance program is in place.

The primary priority for the recreation site and trail program is to secure funding to maintain a safe and sanitary environment for forest-based recreation. The second priority is to provide services and structures that will enhance the recreational experience of those who participate in outdoor recreation.

10.2 Lakes Forest District Recreation Site & Trail Maintenance Issues and Priorities

These plans are neither time nor budget bound, but are intended to identify the objectives and guide the prioritization and implementation of recreation sites and trail management activities so as to ensure optimum attainment of the following goals.

Regional Goals

- Forest Recreation Program

To manage forest recreation activities consistent with user demands, safety considerations and protection while reducing conflicts with other resources.

- Recreation Sites and Trails

To protect and maintain existing Crown investments in forest recreation infrastructure and provide for safe public use of Forest Service Recreation Sites and Trails.

District Goals

- Lakes District Recreation Program

To manage, protect and conserve the forest recreation and visual resources for the use and enjoyment of the public. To provide safe, sanitary recreation use opportunities and protect significant recreation features and reduce conflicts with other resources.

The primary objectives and associated strategies around these goals include:

Use Management

To provide direction on site and trail maintenance, vegetation management, signage management, site and trail improvement and development, dispersed use and enforcement by:

- maintaining the existing recreation sites and trails in a manner consistent with provincial standards -- "to provide safe, sanitary, socially acceptable and environmental sound, sites and trails in areas of concentrated use".
- carrying out maintenance based on annual inspections and a regular maintenance program (table 1).
- managing site and trail, design, development, access and maintenance consistent with provincial standards for the appropriate Recreation Opportunity Spectrum (ROS). Upgrade and Rehab table 1.
- reviewing and determining the development potential and options on proposed sites and trails that have been identified by the public, industry and Forest service.
- reviewing and identifying sites and trails suitable for development, to meet the needs of dispersed use. This strategy is based on information from the recreation analysis. See table 2 for recreation development project work proposed for next 5 years.

- managing and implementing a vegetation management plan for the district recreation sites to ensure public safety (table 1).
- managing an orderly signage plan for the upgrade and maintenance of signage for recreation within the district; ensuring higher visibility of sites and trails; improving direction and safer recreation traffic movement on Forest Service roads (table 1).
- providing guidance and guidelines for field staff in enforcing recreation portions of the Forest Practices Code (FPC) Act.

Resource Management
To provide guidance to the effective management of the recreation resource by:

- maintaining a current database of recreation inventories for the Lakes Forest District. Recreation Features Inventory includes: Recreation Opportunity Spectrum, Trails inventory, Use Recreation Enjoyment for the Public (UREP)s.
- conducting a recreation resource analysis, which provides the foundation to planning and managing the recreation resource in the Lakes Forest District. This includes the analysis of recreation features and related opportunities, demands on and for the recreation resource, supplies of opportunities to utilize the resource, and identifies the obvious gaps in the supply. From the analysis, management strategies and priorities for visual quality, protection of recreation features, wilderness and cultural features, and development of recreation facilities can be formulated.
- developing Management Plans for Land Resource Management Plan (LRMP) designated Recreation area and Wilderness Lakes. Plans to outline area management include examining existing levels of use, existing infrastructure, proposed level or minimum level of use, future development and priorities. Tentative deadline for these plans is set for May 2002. Costs for plan development and flights (field trips) are shown in table 2.

Recreation inventory requirements will be included in the Inventory component (SSFM, FRI).

Landscape
To provide direction for the management of the visual landscape in the Lakes Forest District by:

- carrying out a re-inventory of visually sensitive areas to the new provincial standards (SSFM, FRI).
- prioritizing areas of visual sensitivity and determining a management objective and strategy for these areas.
- providing guidance and procedures for Forest Development Plans, referrals from other agencies, challenging default visual quality class and objectives, and application of visual impact assessments.

10.2.1 Data Tables

Campgrounds: Number and Funding Needs by Category

	Sign and toilet only		Some Tables and Fire Rings		Full Complement of Facilities at each Campsite		Enhanced: Full Time Operator				Priority(1)
Activity	A		B		C		D		**Total**		C H M L
	#	$'s	#	$'s	#	$'s	#	$'s	#	$'s	
Maintenance					25	17,000			25	17,000	H
Repair/Replace Structures						5,000			0	5,000	H
Rehabilitation									0	0	
Development									0	0	
Total	0	0	0	0	25	22000	0	0	25	22000	

Campsites and Trails Three Year Plan

Activity	**2001/02**		**2002/03**	**2003/04**
		$'s	$'s	$'s
Maintenance	25	38,000	38,000	40,000
Repair/Replace Structures		7,000	7,000	8,000
Rehabilitation		0		
Development		30,000	30,000	10,000
Management Planning (LRMP)		6,000	6,000	
		81000	81000	58000

Trails: # and $'s

	#	$'s	Priority(1) C H M L
Maint.	7	8,000	H
Repair		1,000	H
Rehab.			
Develop			
	7	9000	

(1)Priority is critical, high, moderate or low

10.2.2 Discussion and Rationalization of Tables

For the purpose of this Resource Management Plan, the focus of the plan will be on Use management, Recreation site and trail Management. Cost estimates in the following tables are also described in the previous section (Data Table).

Table 1 -- Annual Project Summary for Recreation

Activity	Location	Unit	Estimate Cost	Priorities	Comments
Maintenance of sites	through-out the District	25 sites	36,000	High	Meet Goals and Public expectations
Maintenance of trails	through-out the District	7 trails 31 km	8,000	High	Meet Goals and Public expectations
Vegetation management	through-out the District	min 4 sites annually	2000	High	Public safety
Up-grading & repair/replace	through-out the District	6sites 3 trails	5,000	Mod	May impact public safety
Signage	all sites and trails		2,000	High	Public safety

Table 2 -- Five Year Optimum Investment

Activity	Location	unit	Estimate Cost	Comments	Priorities
New Trail construction	Maxan trail NW ¼ of TSA Maxan Lake to Francois Lake	30 km	30,000	tourism & native employment Shared cost. FS provides materials and expertise, FN provides labour and maintenance	High Trail started 1999 estimated completion 2002
	Cheslatta trail SE ¼ of TSA along Cheslatta Lake	+- 30 km	20,000	tourism & native employment. SPFEB provides half of cost to reopen trail FN provide other half	Mod Work to be completed winter of 2000
	Bella Coola Trail Tetachuck to Ulkatcho Southern part of TSA	+- 90 km	0	Trail is a heritage trail, is located in proposed PAS area. Park to include in management plan	Mod/low
	Star lake trails	+- 3-5 km	10,000	Joint project with Community Forest	High In planning phase
New site construction	various location in District	10 sites	60,000	Sites determined by existing dispersed use	mod
Management planning	LRMP driven	R 10 W 12	12,000	Recreation areas and wilderness lakes	High

Site Maintenance

With the introduction of camping fees, the public has higher expectations and is demanding a higher standard of recreation sites and trails. The public expects neat clean sites and facilities. There is also the expectation of sufficient fire wood and garbage pick up. A large percentage of the recreating public do not want to do anything when camping, they feel that if they pay for something, they should be getting value for their dollar and everything should be provided. This expectation far exceeds the Ministry's ability to provide a base facility with basic requirements.

Dollars for site maintenance as shown in the tables above, provide for the base maintenance requirements and a possible sub-issuer for camp pass sales, under contract. This would alleviate some of the time spent by staff presently maintaining the sites and would allow staff to work on other recreation priorities.

The table in the previous section (Data Table) indicates the present recreation budget for the Lakes Forest District (Campgrounds: number and funding needs by category). Maintenance dollars include any contract maintenance (10 weeks on weekends), firewood, pump pit toilets painting, materials and supplies. Repair/replace structures are based on past cost for the replacement of tables, outhouses and other structures including signage.

Trail numbers and costs

For this year, there are no dollars allocated to trails. Dollars shown are based on past expenditures for trail upkeep.

Campsite and Trails Three Year Plan

Maintenance dollars are based on past contract dollars at about $1500 per site, which includes firewood, grass cutting, pump pit toilets and contracts to maintain sites on a weekly bases 20-22 weeks per year. Vegetation management is also included with maintenance. Repairs/Replace structures are based on past cost, vandalism and structure deterioration and signage replacement and upkeep. It is anticipated that this should not change over the next three years. Development costs include both new site and trail development. Over the next three year, it is hoped, that we can develop 5 new sites and continue with trail construction of the Maxan trail and the Star Lake trail.

10.3 Morice Forest District Recreation Site & Trail Maintenance Issues and Priorities

The Morice Forest District has a total of 23 Forest Service Recreation Sites and 4 Recreation Trails. Recreation Sites include: Aspen, Owen Lake, Owen Flats 'A', Owen Flats 'B', Lamprey Creek, Morice Lake, Owen Hat, Nadina Lake, Poplar Lake, Twinkle Lake, Sweeney Lake East, Sweeney Lake West, Parrott Lake, Sunset Lake, Paul Lake, Bear Island, Old Fort, Tanglechain Lake, Doris Lake, Noralee East, Noralee West, Eastern Lake, and Helen Lake. Recreation Trails include: Nanika-Kidprice Portage Trails, L.D. Byman Trail, Bear Island Viewpoint Trail, Morice Mountain Ski Trails.

One of the goals of the Morice Forest District recreation program is to provide direction on site and trail maintenance, signage management and site and trail improvement. We also provide guidance on managing the visual and recreation resources in the district.

Funding is required to maintain the existing recreation sites and trails in a manner that is consistent with the provincial standards. "To provide safe, sanitary, socially acceptable and environmental sound sites and trails in areas of concentrated use". This maintenance is carried out based on annual inspections and a regularly scheduled maintenance program which is primarily carried out by a maintenance contractor, Forest Service (FS) staff at some selected sites and the Northwest Fire Centre Initial Attack Crew(NWFC) which unavailable during forest fires.

10.3.1 Data Tables

Campgrounds: Number and Funding Needs by Category

Activity	A		B		C		D		Total		Priority[1]
	Sign and toilet only		Some Tables and Fire Rings		Full Complement of Facilities at each Campsite		Enhanced: Full Time Operator				C H M L
	#	$'s	#	$'s	#	$'s	#	$'s	#	$'s	
Maintenance					23	31,800			23	31,800	C
Repair/Replace Structures		8,000								8,000	H
Rehabilitation											
Development		800							0	800	L
Total	0	8800	0	0	23	31800	0	0	23	40600	

Campsites and Trails Three Year Plan

Activity	2001/02	2002/03	2003/04
	$'s	$'s	$'s
Maintenance	31,800	30,000	30,000
Repair/Replace Structures	8,000	2,000	2,400
Rehabilitation	0	500	500
Development	18,400		
	58200	32500	32900

Trails: # and $'s

	#	$'s	Priority[1] C H M L
Maint.			
Repair			
Rehab.			
Develop	110 km	17,600	L
		17600	

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[1] Priority is critical, high, moderate or low

10.3.2 Discussion and Rationalization of Tables

It is desirable to have a single maintenance contract covering all of the recreation sites in the district. This would enable FS staff and the NWFC crew to focus on their other duties.

Our current budget allocation of $12,680 allows the district to provide minimal maintenance functions at the recreation sites. These include minor repairs to structures (replacing hinges, paint touch-ups, etc), keeping the toilets clean and supplied with toilet paper, keeping the paths to the toilets clear and mowing grass as needed. As the sites in the district are user maintained, emptying garbage bins is not necessary but litter clean-up needs to be done as not all site users respect the "pack your garbage out" policy. Supplying firewood is not a function of recreation site maintenance but many campers do expect firewood to be supplied. Various structures (toilets, tables, fire rings) in the Morice Forest District need repair and/or replacing in order to maintain the provincial standards.

Funds are also needed to manage an orderly signage plan for the upgrade and maintenance of signage for recreation within the district. To ensure higher visibility of sites and trails and improve direction and safer recreation traffic movement on Forest Service roads.

Site Maintenance

With the introduction of camping fees last year, the public now has higher expectations and is demanding a higher standard of recreation sites and trails. The public expects neat, clean sites and facilities that are free of litter, where grass is cut, and facilities well-maintained and repaired promptly. There is also the expectation of sufficient firewood and garbage pick-up. A large percentage of the recreating public do not want to do anything when camping, they feel that if they pay for something, they should be getting value for their dollar and everything should be provided. This expectation far exceeds current Ministry funding the recreation site maintenance.

The Morice Forest District requires more funds for recreation site maintenance, supplies and materials. Also, the recreation site and trail maintenance program needs to focus more on user-maintained sites due to budget constraints.

Roads are in disrepair at a few sites – this is a safety issue and the public has voiced their concern about some of the roads leading to the recreation sites.

Hazard trees must be identified and removed since the funds have not been available to have them surveyed or removed in the past 5 years. This is a high priority as it constitutes a safety hazard.

Trail numbers and costs

No recreation site or trail development is being currently planned.

Campsite and Trails Three Year Plan

If funding is not secured, we will continue to see deterioration in the quality of the sites and trails in this district. This will adversely affect the recreation experience that the public expects to have while using forest service recreation sites. Lack of adequate funding could also result in recreation site closures across the district. Conversely, upgrades and improvements have the potential to enable some recreation sites to be classified as Enhanced Sites and extra fees would be charged accordingly.

In summary, funding is required for the following:

- Maintenance of sites – throughout the district; high priority; to meet provincial goals and public expectations
- Maintenance and GPSing of trails – throughout the district; high priority; to meet goals and public expectations
- Up-grading and repair/replace – throughout the district; moderate priority; may impact public safety
- Signage – all sites; high priority; public safety
- Danger tree assessment and falling – throughout the district; high priority; public safety.

10.4 Bulkley-Cassiar Forest District Recreation Site & Trail Maintenance Issues and Priorities

The Bulkley-Cassiar Forest District has a total of 25 Forest Service Recreation Sites. 10 sites in the Bulkley District, and 15 sites in the Cassiar District. Sites in the Bulkley include: Jonas Creek, Telkwa River, Dennis Lake, Kitseguecla Lake, Morin Lake, Chapman Lake, Torkleson Lake, Starvation Lake, Taltzen Lake, and Twin Falls. Sites in the Cassiar include: Morchuea Lake, Glenora, Winter Creek, Dodjatin Creek, Allan Lake, Sawmill Point, French Creek, Morley Lake, Palmer Lake, Warm Bay, The Grotto, McDonald Lake, Como Lake, Surprise Lake, and Great Glacier.

Recreational use in the Bulkley-Cassiar Forest District is growing. Existing recreation sites, as well as new sites, need to be developed more extensively in order to accommodate the public. Since there is a planned closure of some Recreation sites in the Cassiar, new sites should be developed. Presently there is no major Forestry activity in the Cassiar Forest District. It would be good for the Forests Service public relations to put money into the development of more Recreation sites in the Cassiar Forest District. The Recreation Maintenance Fee Program is now in effect, and some sites need to be further developed in order to provide adequate service and facilities to the recreational public as offered elsewhere in other Forest Districts.

10.4.1 Data Tables

Campgrounds: Number and Funding Needs by Category

	Sign and toilet only										Priority[1]
			Some Tables and Fire Rings								C H M L
					Full Complement of Facilities at each Campsite						
							Enhanced: Full Time Operator				
Activity	A		B		C		D		**Total**		
	#	$'s	#	$'s	#	$'s	#	$'s	#	$'s	
Maintenance			9	9,000	16	17,000			25	26,000	H
Repair/Replace Structures			9	2,500	16	3,000			25	5,500	H
Rehabilitation			2	4,000	2	4,000			4	8,000	M
Development			2	1,500	5	6,000			7	7,500	H
Total	0	0	22	17000	39	30000	0	0	61	47000	

Campsites and Trails Three Year Plan

Activity	2001/02	2002/03	2003/04
	$'s	$'s	$'s
Maintenance	27,500	29,500	32,500
Repair/Replace Structures	7,500	4,000	4,000
Rehabilitation	12,000	4,000	3,500
Development	11,000	3,500	3,500
	58000	41000	43500

Trails: # and $'s

	#	$'s	Priority[1] C H M L
Maint.	50	1,500	
Repair	10	2,000	
Rehab.	10	4,000	
Develop	3	3,500	
	73	11000	

[1] Priority is critical, high, moderate or low

10.4.2 Discussion and Rationalization of Tables

Site Maintenance
Due to budget constraints, the Bulkley District Recreation Sites are presently maintained, at no cost, by the Northwest Fire Center Initial Attack Crew; however, crews are unavailable during fires. For the 2000 RMP money has been requested to develop a secure maintenance contract for these sites.

The Recreation sites in the Cassiar District are presently being maintained by 6 different maintenance contracts. Continued funding is required to maintain these sites.

Various structures in the Bulkley-Cassiar Forest District Recreation sites need repair and replacing. Due to the location of the Cassiar Recreation sites, the cost of transportation and materials to complete repairs is very high, this has been reflected in the RMP. Repair and replacing of structures include: new outhouses and digging holes, replacing signs and repairing tables, etc.

There are Recreation sites in the Cassiar that may be closed (Winter Creek, Dodjatin Creek, and The Grotto). In closing these sites, the area needs to be rehabilitated which involves lowbedding of equipment and transportation of materials. On sites in both the Bulkley and Cassiar, vegetation has encroached on various camping sites, and some camping sites are no longer level. New outhouse holes need to be dug at various sites, and old holes need to be filled in and rehabilitated. Boat launches in some Recreation sites need to be gravelled and leveled out. Machinery will be required to rehabilitate these areas.

Trail Number and Costs
There are approximately 50 trails in the Bulkley Forest District. Most of these trails are user maintained and are not designated as Forest Service trails. There are some trails which are co-management between the Forest Service and different user groups at no cost to the Ministry. If funding is approved and secured, the Bulkley Forest District can take an active role in designating and maintaining trails in the Bulkley Forest District.

There are various trails and Heritage trails in the Cassiar Forest District which are user maintained. If funding can be approved and secured, the Cassiar Forest District can take an active role in designating and maintaining trails in the Cassiar District

In the past there has been no budget for trail maintenance (signs, small brushing projects etc.) In order to maintain and continue to use these trails in the Bulkley Cassiar Forest District, funding is required.

In the past there has been no budget for trail rehab/repair. In order to continue to use some of these trails funding is required.

Due to Forest and Road development in the Bulkley District new recreational opportunities and access are being made available. In order to access some of these areas efficiently and properly, funding will be required.

Campsite and Trails Three Year Plan

In the 2001/02 year, request for funding for maintenance for the Bulkley-Cassiar Forest District Recreation Sites has risen from previous budgets. This is accounting for a maintenance contract for the Bulkley Forest District Recreation sites. Years 2003 and 2004 have taken into account inflation.

Due to lack of funding in the past, money requested in the 2001/02 year for:

- repairing and replacing structures on recreation sites and trails,
- rehabilitating recreation sites and trails, and
- expanding recreation sites and trails

is required. In 2003 and 2004 years, the request is less due to most of major repairs and works being completed.

10.5 Kispiox Forest District Recreation Site & Trail Maintenance Issues and Priorities

Regional Program Goal
"To protect and maintain existing Crown investments in forest recreation infrastructure and provide for safe public use of Forest Service Recreation Sites and Trails".

Objective 1

Maintain, upgrade and rehabilitate 12 existing recreation sites to MoF standards (priority-critical).

> Strategy:
> Repair or replace outhouses, picnic tables, fire-pits, signs, registration boxes, address access restrictions (Section 105), where required.

Objective 2

Address public safety issues on high-use lakes (priority-critical).

> Strategy:
> Install dock and swimming buoys to address safety issue of 'seadoo-ers' and swimmers at Keynton Lake Recreation site. Replace dock at Bonus Lake (second most highly used recreation site in district) as dock is partly submerged.

Objective 3:

Maintain access roads to existing Forest Recreation Sites (priority-high).

> Strategy:
> Perform general maintenance on access roads into Elizabeth Lake, Upper Kispiox, Derek Lake and Suskwa Forest Recreation Sites.

Regional Program Goal
"To manage forest recreational activities consistent with user demands, safety considerations and site protection while reducing conflicts with other resource uses."

Objective 1:

Rehabilitate existing trails in the district as per assessments (priority-critical).

> Strategy:
> Rehabilitate existing assessed trails to Kispiox District trail standards. Trails assessed include, Comeau Road, Insect Lookout Road, Coyote Creek and Netazul. Develop and install signage (directional and interpretative), and brochures.

Objective 2:

Develop low elevation recreation/interpretative opportunities (priority-medium).

Strategy:
Build low elevation cross country ski/hiking trail (potential for Pentz Lake area); low elevation hiking trails (e.g. Old Hazelton trail proposal, first part of Babine Trail [Two Mile to Suskwa]); interpretative trails (e.g. Old Kuldo Interpretative Trail) and horseback riding trails (potential for Kitwanga/Kispiox Valley areas).

Objective 3:

Expand and/or develop Forest Recreation Sites (priority-medium).

Strategy:
Develop new camping pads at Pentz and Derrick Lake sites. Build boat access camp site on the other side of Keynton lake. Build a covered picnic area at Upper Kispiox site. Develop new Forest Recreation sites in northern portion of district (potential for Smokee Lake, Sicintine Lake and Gunanoot Lake sites), develop back-country recreation sites and develop boat access only for Kispiox River sites .

Objective 4:

Locate and map historic trails (priority-medium).

Strategy
Locate, map and initiate rehabilitation feasibility study on the Telegraph Trail, Cranberry/Nass Trail, Grease Trails and other historic trails in the management unit.

Objective 5:

Rehabilitate historic trails (priority-low).

Strategy:
Pending feasibility study, rehabilitate existing historic trails in the district to Kispiox Forest District trail standards (e.g. Babine trail, Telegraph trail, other historic trails).

Objective 6:

Develop new Forest Service hiking trails (priority-low).

Strategies:
Assess and rehabilitate existing, non-established trails in district.

Assess and build trails to alpine in newly accessed areas (potential for Kuldo Mtn., Atna/Shelagyote, Tommy Jack Mtn., and Sicintine area) and existing access areas (potential for Thoen/Nicheskwa, and backside of Nine Mile Mtn.).

Objective 7:

Develop a community forest within the district (priority-low).

Strategy:
Develop an intensively managed community forest with examples of different silviculture systems, harvesting systems, silviculture, riparian management, windthrow management etc.

Promote community awareness of management activities with interpretative signs, brochures and guided tours.

Objective 8:

Develop tourism opportunities with other agencies (priority-low).

Strategy:
Work with other agencies (BC Parks, Federal Parks, Districts, Municipalities and Community Groups) to develop tourism opportunities within the District. Potential exists for back country guided trips, eco-tourism, cross country skiing, snowmobiling, hiking and others.

10.5.1 Data Tables

Campgrounds: Number and Funding Needs by Category

Activity	Sign and toilet only		Some Tables and Fire Rings		Full Complement of Facilities at each Campsite		Enhanced: Full Time Operator				Priority(1)
	A		B		C		D		**Total**		C H M L
	#	$'s	#	$'s	#	$'s	#	$'s	#	$'s	
Maintenance	3	1,000			9	9,000			12	10,000	
Repair/Replace Structures						3,000			0	3,000	
Rehabilitation						4,000			0	4,000	
Development									0	0	
Total	3	1000	0	0	9	16000	0	0	12	17000	

Campsites and Trails Three Year Plan

Activity	**2001/02**	**2002/03**	**2003/04**
	$'s	$'s	$'s
Maintenance	20,000	20,000	20,000
Repair/Replace Structures	3,000	3,000	3,000
Rehabilitation	4,000	4,000	4,000
Development	0		
	27000	27000	27000

Trails: # and $'s

	#	$'s	Priority(1) C H M L
Maint.		10,000	
Repair			
Rehab.			
Develop			
	0	10000	

(1) Priority is critical, high, moderate or low

Additional expenditures:		
	Develop Recreation objectives for SMZ's in higher level plans (Kispiox LRMP)	**$10,000**
	Prepare Recreation Strategic Plan	**$15,000**
	Location and mapping of existing trails	**$10,000**
	Total	**$35,000**

10.6 Kalum Forest District Recreation Site & Trail Maintenance Issues and Priorities

10.6.1 Data Tables

Campgrounds: Number and Funding Needs by Category

	Sign and toilet only										Priority(1) C H M L
			Some Tables and Fire Rings								
					Full Complement of Facilities at each Campsite						
							Enhanced: Full Time Operator				
Activity	A		B		C		D		**Total**		
	#	$'s	#	$'s	#	$'s	#	$'s	#	$'s	
Maintenance					15	30,000	2	29,000	17	59,000	C/H
Repair/Replace Structures						2,860		2,835	0	5,695	H
Rehabilitation									0	0	
Development									0	0	
Total	0	0	0	0	15	32860	2	31835	17	64695	

Campsites and Trails Three Year Plan

Activity	2001/02	2002/03	2003/04
	$'s	$'s	$'s
Maintenance	74,000	77,700	81,585
Repair/Replace Structures	6,695	7,030	7,381
Rehabilitation	7,000		
Development	10,000		
	97695	84730	88966

Trails: # and $'s

	#	$'s	Priority(1) C H M L
Maint.	23	15,000	H
Repair		1,000	H
Rehab.	1	7,000	H
Develop	2	10,000	L
	26	33000	

(1) Priority is critical, high, moderate or low

10.6.2 Discussion and Rationalization of Tables

The plans and funding requests are based on the following parameters:

Maintenance (regular sites): Basic maintenance for each site is $2000 and RCMP overtime. Maintenance includes purchase of supplies, firewood, pump pit toilets and contracts to maintain sites on weekly basis (20 weeks per year) and to paint facilities once a year.

Maintenance (enhanced sites): Maintain Redsand, Hart Farm and 7 km of trails. This includes supplies and interpretative (NFW, etc.) requirements.

Repair/Replace Structures: Cost is based on 10% of estimated value of present infrastructure at all sites including tables, pit toilets, signage. The cost does not include Outdoor Classroom and Viewing Platform at Redsand or swimming float at Clements Lake as these structures are reasonably new and will not have to be replaced within the next 3 years.

Trails (maintenance): Costs are based upon average $500 per trail to maintain plus $3500 extra for the Onion Lake Ski Trails to undertake brushing pruning and general trail maintenance.

Trails (repair): Costs include materials for repair of handrails on bridges, boardwalk repairs, signage, etc. (ongoing).

Trails (rehab): Complete rehabilitating Pine Lakes Trail.

Trails (development): Reopen Treasure Mountain Trail, install interpretative material on Operations Trail (Redsand).

Costs for 2002/03 and 2003/04 fiscal years are based upon 5% increase each year.

10.7 North Coast Forest District Recreation Site & Trail Maintenance Issues and Priorities

The North Coast Forest District (DNC) currently has only three recreation sites and three trails maintained for public use. With only one provincial park campground and picnic area in the entire district, the DNC recreation program is especially important in providing the public outdoor recreational opportunities.

In a recent Forest and Fisheries Tourism Opportunities Study in the North Coast Forest District, it was noted that:

> *The forecast is for the steady growth to continue, and that there is excellent potential to develop the tourism industry in the study area, as well as throughout the province. Adventure tourism constitutes a major growth sector of the tourism industry -- outpacing every other sector of the Canadian economy. Market demand for the type of travel experience offered in the North Coast and throughout British Columbia continues to grow, as baby boomers age and travel more frequently. The desire among a growing urban-based population to experience a natural setting is one of several key trends stimulating this increase in demand.*

As the tourism industry grows, demand and use for MoF recreation sites and trails will also continue to increase from those unwilling or unable to pay commercial recreation operators. The Northwest Tourism Region, which includes the North Coast Forest District, accounts for approximately 7% (2.2 million visitors) of the provincial visitor volume and 5% ($425 million) of the provincial tourism revenue. The majority of visitors (73%) are BC residents.

Maintaining the recreation infrastructure is always and will continue to be a challenge to maintain in a coastal environment. The current funding levels will threaten the ability of the DNC to continue to maintain its existing recreation infrastructure with the likely outcome of closing all trails and some sites within the next one or two years.

10.7.1 Data Tables

Campgrounds: Number and Funding Needs by Category

	Sign and toilet only										Priority(1)
			Some Tables and Fire Rings								C H M L
					Full Complement of Facilities at each Campsite						
							Enhanced: Full Time Operator				
Activity	A		B		C		D		**Total**		
	#	$'s	#	$'s	#	$'s	#	$'s	#	$'s	
Maintenance			1	5,000	2	20,000			3	25,000	H
Repair/Replace Structures			0	2,500	0	10,000			0	12,500	H
Rehabilitation									0	0	
Development											
Total	0	0	1	7500	2	30000	0	0	3	37500	

Campsites and Trails Three Year Plan

Activity	2001/02	2002/03	2003/04
	$'s	$'s	$'s
Maintenance	35,000	35,000	35,000
Repair/Replace Structures	12,500	35,000	15,000
Rehabilitation	100,000	0	0
Development	10,000	85,000	0
	157500	155000	50000

Trails: # and $'s

	#	$'s	Priority(1) C H M L
Maint.	3	10,000	H
Repair			
Rehab.	3	100,000	C
Develop	1	5,000	L
	7	115000	

(1)Priority is critical, high, moderate or low

10.7.2 Discussion and Rationalization of Tables

Site Maintenance

The DNC currently maintains two marine access sites (Welcome Harbour and Bishop Bay Hot Spring) and one road access site (Lachmach). The minimum required to maintain these sites is $25,000/year. Additional funding for repair/replacement of site structures of $12,500 is also required to maintain the sites at the current level.

The site at Bishop Bay will require the replacement of the dock within two years (approx. cost $20,000). The cost of removing the dock and ramp is approximately the same. Repairs to the dock where made in 1999 to extend the life another two years.

Lachmach: Public use of the Lachmach site has been dramatically increasing over the last two years. Presently, there are only 12 campsites but there will often be 30+ vehicles at the site. Over 50 vehicles have been counted on long weekends. Expansion of this site is required to provide facilities for the current use of this site. This will require $10,000 for site design and plans (year 1) and $80,000 for site development.(year 2).

Trail numbers and costs

All trails within the North Coast Forest District require extensive rehabilitation ($100,000). The risk to public safety and degradation to the environment will force the district to close all trails if funding for rehabilitation is not made available.

Once all sites and trails are brought to standard, the annual cost to maintain all sites and trails should not exceed $50,000.

11.0 RESEARCH

11.1 Regional Research Issues and Concerns

Research and extension of scientific knowledge is a cornerstone of sustainable forest management. The research program within the Prince Rupert Forest Region (PRFR) has been recognized provincially as high caliber and is viewed as a leader in many topic areas. This section provides a brief history of the research program in the PRFR and outlines issues and concerns.

Research activities in the PRFR date back to the early 1960's with the installation of silvicultural trials by Research Branch staff. In the mid 1970's the Forest Sciences Section began with a Silviculturalist and Hydrologist. The ecological classification program began in the late 1970's, and the Section expanded to include soil scientists, botanists, and interpretation/training foresters (under contract). In the early 1980's the contract positions became full time, and the Section had a staff complement of 15 FTE's. At that time the operating budget for the Section was approximately $500,000 over salaries. In the mid 1980's, staff and budget cuts began, and continued to the present. The Section now has a staff of 7 full time researchers with one half time technician and one seasonal half time technician. One additional researcher is on a multi year assignment to the National Boreal Research Program. Administrative duties of the Forest Sciences Officer are shared by three researchers.

The disciplines within the Forest Sciences Section cover the physical and biological sciences: silviculture, forest ecology, wildlife habitat ecology, soil science, geomorphology and hydrology. To date the group has not covered the social sciences.

Of note, there is a very low turnover of research staff and the average length of tenure is over 17 years. This continuity is an asset for understanding natural processes and establishing working relationships with staff from MoF, MELP, DFO, and licensees, as well as establishing credibility with First Nations, NGO's and the Public.

Forest Sciences staff undertake research and consulting, with the split ranging from 60 – 40% to 80-20% for the different disciplines. While there are operational silviculturists in districts and in the regional office, the other disciplines do not have operational counterparts. As a result, Forest Sciences staff generally have a heavy extension/ consulting workload. The general nature of research is operational in focus, as opposed to basic scientific explorations.

Through strong working relationships with operational programs over a long period of time, the Forest Sciences section has developed considerable support within government and the forest industry. There is a recognition that the group is connected to operational issues, ready to assist when issues arise, and provide workable solutions in a timely manner. Partnerships have been a key characteristic of research projects in the PRFR for over 2 decades.

There is a long history of management input to research direction. In the late 1970's, the Regional and District Research Advisory Committees (RRAC and DRAC) were initiated. This was a particularly useful process for providing direction to new staff. The role of RRAC and DRAC continued through the 1980's, however as staff and budget cuts reduced the research capability, annual committee meetings have been replaced with presentations to the Regional Management Team. The RRAC process will be re-initiated in early October 2000 to focus regional input to the FRBC-SCBC call for proposals.

There is a long history of involvement in research funded by "outside" sources. The Forest Sciences group was involved in the administration of FRDA I, and received funding for a wide range of research from FRDA I and II. The group was also directly involved in the establishment of the Fish/Forestry Interaction Program, directing the program and undertaking research. Research was also undertaken with funding from the South Moresby Forest Replacement Account. Numerous research projects were funded under FRBC-SCBC, and the researchers have been directly involved in the new initiative to identify knowledge gaps for FRBC-SCBC funding.

Victoria MoF funding was instrumental in the Biogeoclimatic Classification Program, silvicultural systems research, and sediment budget studies, and continues to support long term silvicultural installations and adaptive management studies. Victoria MoF funding in the current fiscal year was used to initiate alluvial fan research and extension to address a major gap in the FPC.

A central issue facing regional research is a lack of capability to address the expanding need for science based sustainable forest management. All research disciplines have been reduced to a principal researcher. All assistant level researcher positions are either vacant or removed from the organization chart. The level of field/lab technical support is critically low. The group is in the position that **if new research and extension funding becomes available, it cannot be used without dropping existing priority research or extension work**.

An issue facing several disciplines is the lack of funding for continuation of long term studies. Long term studies provide critical information for site productivity, AAC determinations, and selection of appropriate silvicultural prescriptions. Long term studies are the foundation for understanding the influence of natural events in managed forests (i.e. slope stability and stream channel responses). There are currently inadequate resources with the MoF to undertake repeat measurements, tend sites and analyze/report results. Unfortunately, outside funding sources have not supported this work due to the perception of "off loading". At a time when sustainable forest management requires long term data sets, these installations are invaluable, yet are at serious risk of disappearing into oblivion. These installations represent major investments in both time and money. Once lost, these installations will require decades to re-establish. This time lag will result in further challenges to MoF programs as they strive for sustainable management objectives and certification.

An additional concern is that the average age of researchers is 46 years, with most principle researchers within less than 10 years of retirement. When the staff leave there will be a considerable loss of experience, particularly if there is no overlap with new staff hires.

11.2 Listing of all Regional Research Issues

The template for each research/extension issue will be completed following the FRBC – SCBC call for proposals and discussions with the Regional Research Advisory Committee in mid-October, 2000.